A Dissertation on

"CLINICAL STUDY ON NECK NODE DISSECTIONS FOR ORAL MALIGNANCIES PERFORMED IN RAJIV GANDHI GOVERNMENT GENERAL HOSPITAL"

Dissertation submitted to

THE TAMIL NADU Dr.M.G.R.MEDICAL UNIVERISTY

CHENNAI

with partial fulfilment of the regulations

for the Award of the degree

M.S. (General Surgery)

Branch – I

MADRAS MEDICAL COLLEGE ,

CHENNAI-APRIL 2014

BONAFIDE CERTIFICATE

Certified that this dissertation is the bonafide work of **Dr. P.SARAVANAN** on "**CLINICAL STUDY ON NECK NODE DISSECTIONS FOR ORAL MALIGNANCIES PERFORMED IN RAJIV GANDHI GOVERNMENT GENERAL HOSPITAL "** during his M.S. (General Surgery) course from May 2011 to April 2014 at the Madras Medical College and Rajiv Gandhi Government General Hospital, Chennai – 600003.

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I certainly declare that this dissertation titled, "CLINICAL STUDY ON NECK NODE DISSECTIONS FOR ORAL MALIGNANCIES PERFORMED IN RAJIV GANDHI GOVERNMENT GENERAL HOSPITAL ",represent a genuine work of mine .The contribution of any supervisors to the research are consistent with normal supervisory practice and are acknowledged.

I also affirm that this bonafide work or part of this work was not submitted by me or any others for any award , degree or diploma to any other university board , neither in India or abroad . This is submitted to The Tamil Nadu Dr.MGR Medical University, Chennai in partial fulfilment of the rules and regulation for the award of Master of Surgery Degree - Branch 1 (General Surgery).

DATE :(Dr.P.Saravanan)

PLACE:

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This is to certify that this dissertation entitled **"CLINICAL STUDY ON NECK NODE DISSECTIONS FOR ORAL MALIGNANCIES PERFORMED IN RAJIV GANDHI GOVERNMENT GENERAL HOSPITAL"** is a bonafide and genuine research work done by **DR.P.SARAVANAN,** postgraduate student in the Department of General Surgery, Madras Medical College & Rajiv Gandhi Government General Hospital,Chennai-3 in partial fulfillment of the requirement for the award of the degree of Master of Surgery in General Surgery in April 2014, under my guidance and supervision. This dissertation is original and no part of this study has been submitted for the award of any other Degree or Diploma.

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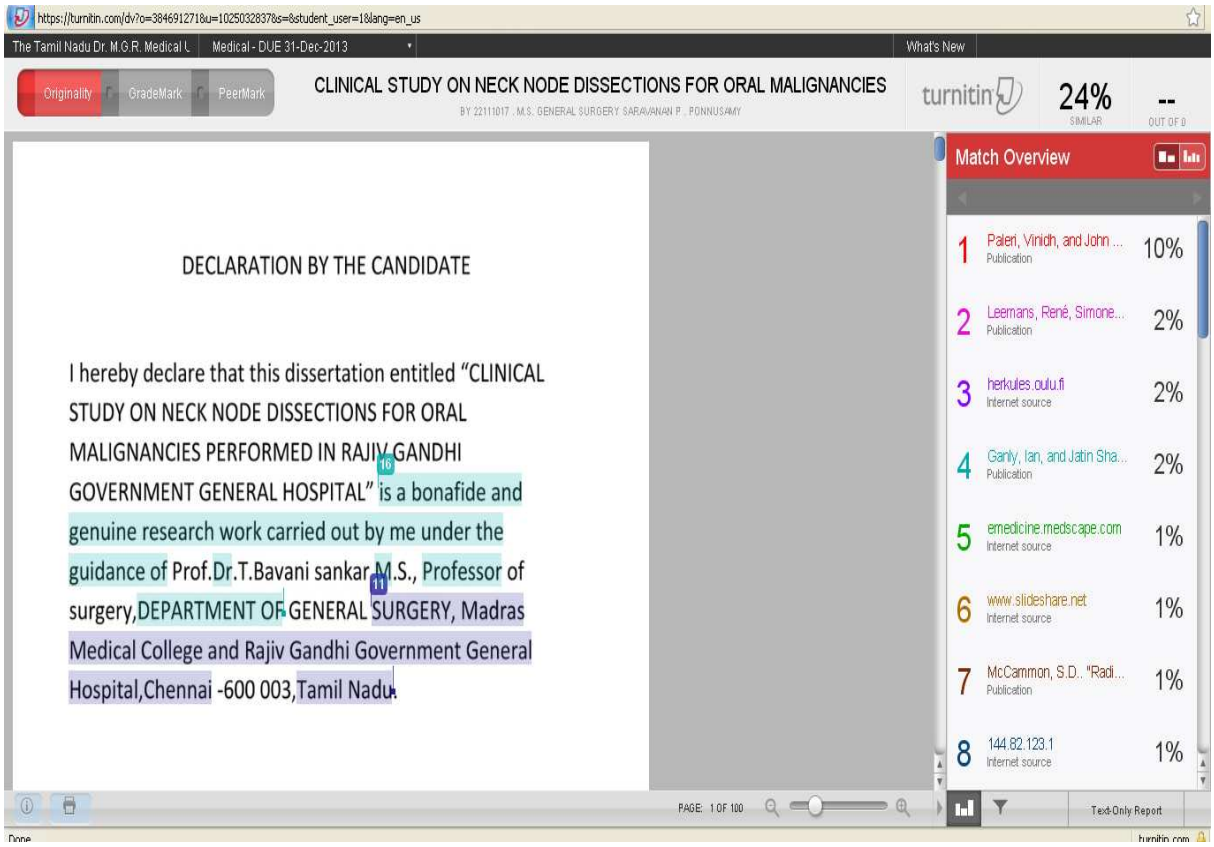
LIST OF ABBREVATIONS USED

T	**-**	**TUMOUR**
N	**-**	**NODE**
M	**-**	**METASTASIS**
FNAC	**-**	**FINE NEEDLE ASPIRATION CYTOLOGY**
CT	**-**	**COMPUTERISED TOMOGRAPHY**
FDG	**-**	**18-FLURO-2-DEOXY-D-GLUCOSE**
MRND	**-**	**MODIFIED RADICAL NECK DISSECTION**
RND	**-**	**RADICAL NECK DISSECTION**
SOHND	**-**	**SUPRAOMOHYOID NECK DISSECTION**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To
Dr.P.Saravanan,
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Dear Dr.P.Sarvanan,

The Institutional Ethics committee of Madras Medical College, reviewed and discussed your application for approval of the proposal entitled "Clinical study on neck node dissections for oral malignancies performed in Rajiv Gandhi Government General Hospital" No.22082013.

The following members of Ethics Committee were present in the meeting held on 13.08.2013 conducted at Madras Medical College, Chennai -3.

1. Dr.G.SivaKumar, MS FICS FAIS --- Chairperson
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We approve the proposal to be conducted in its presented form.

Sd/ Chairman & Other Members

The Institutional Ethics Committee expects to be informed about the progress of the study, and SAE occurring in the course of the study, any changes in the protocol and patients information / informed consent and asks to be provided a copy of the final report.

R Nandini 26/8/13
Member Secretary, Ethics Committee

MEMBER SECRETARY
INSTITUTIONAL ETHICS COMMITTEE
MADRAS MEDICAL COLLEGE
CHENNAI-600 003

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ABSTRACT:

Oral cancer is one of the commonest cancers encountered day to day among patients in India. In comparison to the western world oral cancer occurs more commonly among young Indian males . Oral cavity malignancy accounts for more morbidity and mortality among the cancer population in India.

Of the many sites of cancers of aerodigestive tract, oral cavity malignancy still forms a huge burden of cases in Indian population accounting for a considerable proportion of health problems encountered day to day.

Efficient management of oral cavity malignancy includes a multimodality approach of which the role of a surgeon is more significant. One of the key factors affecting prognosis and overall survival in oral cavity cancer is neck node status. Effective management of nodal metastasis in oral cavity cancers is the key to overall survival of the patient. The proportion of patients with node metastasis contributes a common problem in treating patients with oral cavity malignancies. Neck node dissections done for managing the nodal metastasis in oral cavity malignancy is one of the important work done by a surgeon. In patients with oral cavity malignancy this greatly improves the survival of patients.The purpose of this study is to analyse the various types of neck node dissection performed for patients with oral malignancy and compare their various clinical outcomes.

AIM OF THE STUDY

The purpose of this study is to analyze the various types of neck node dissection done for patients with oral malignancy and compare their effectiveness in treating nodal metastasis

OBJECTIVES

- To analyze the various types of neck node dissection done for patients with oral malignancy

- To study about various clinical aspects of nodal metastasis like incidence of nodal metastasis and extracapsular extension.

- To analyse the incidence of postoperative complications arising from the procedure

MATERIALS AND METHODS

STUDY CENTRE :

Madras Medical College and Rajiv Gandhi Government General Hospital, Chennai

SUBJECT SELECTION : Randomly selected

STUDY DESIGN : Prospective Study

DURATION OF STUDY : 6 months

INCLUSION CRITERIA:

Patients undergoing neck node dissection surgery for oral cavity malignancy.

EXCLUSION CRITERIA : None

SAMPLE SIZE : 50 Cases

METHODOLOGY:

The study will be a prospective one and patients who are candidates to undergo neck node dissection are selected.Their clinical findings, diagnosis and staging, method of neck dissection, complications, histopathological results will be studied upon .

SCREENING VISITS :

Before the surgical procedure to record clinical details and investigations, preoperative staging of disease

SURGERY :

All relevant intraoperative details necessary for the study are recorded

FOLLOW UP VISITS :

Patients are reviewed periodically till they are discharged and again reviewed when the biopsy report is issued .

Using these clinical data various statistical parameters would be analysed and results were obtained.

RESULTS:

1. In this study male patients are affected more commonly than female depicting the fact that harmful practices related to tobacco usage and alcohol consumption are widely prevalent among the male population thus placing them at risk for carcinoma of the oral cavity.

2. The age incidence of oral malignancies were mostly 40 to 60 years. But it is important to note that age group of 20 to 40 years comes next rather than others and this should be looked upon with caution because the incidence of oral cavity malignancy is on the rise in younger individuals due to the widespread availability and increased usage of tobacco products and reduced awareness among them.

3. Oral cavity carcinoma occurred more commonly in the buccal mucosa including gingivobuccal complex due to the habit of keeping tobacco products like pan, quid etc in the gingivobuccal sulcus causing chronic irritation leading ultimately to malignancy.

4. Among the patterns of presentation of oral malignancy, Non healing ulcer, proliferative growth or an ulceroproliferative growth was the commonest mode of presentation.

5. Most of the patients had clinically palpable nodes along with the primary during routine clinical neck examination. This signifies that presence of nodal pathology in oral cavity malignancy acts as a significant factor both in management and prognostication.

6. Among the clinically palpable nodes levels I,II and III were the levels most commonly clinically palpable nodes in carcinoma of oral cavity. This again denotes the varied lymphatic drainage pattern of oral cavity primary and the need to address the nodal metastasis by performing modified radical neck dissection, selective neck dissection and radical neck dissections.

7. In general for malignancies of oral cavity with clinically palpable nodes modified radical neck dissection should be performed on the primary lesion side and either a selective neck dissection on the other side. In general lesions in midline or close to the midline are dealt with selective neck dissection on both sides in clinically negative neck or modified radical neck dissection on both sides in clinically palpable neck nodes. Radical neck dissection is performed when the nodal staging is higher like N3 or in patients with advanced lesions who underwent preoperative radiotherapy.

8. Regarding the clinical stage of patients most of the patients had T2 and T3 stage of primary oral cavity cancer. when nodal stage was analysed most of the patients had N2 and N3 status. This signifies that oral cavity malignancy is detected quite at an earlier stage facilitating an effective cure to the affected population.

9. Fine needle aspiration cytology was positive in 92 percent of patients with clinically palpable neck nodes. Hence FNAC is an important initial diagnostic modality in detecting secondary deposits in palpable nodes. But clinically palpable node in a patient with oral cavity primary should be considered as a metastatic deposit and fine needle aspiration cytology further confirms it.

10. Regarding the type of procedure performed for neck nodes modified radical neck dissection was done more commonly followed by selective neck dissection and radical neck dissection respectively. Modified radical neck dissection was performed on patients with early stage and clinically palpable neck nodes. Selective node dissection was performed in patients with clinically negative neck according to the site of primary lesion. Radical neck dissection was performed in patients with advanced nodal stage in order to achieve complete resection of tumour burden thereby improving the survival of the patients.

11. After surgery for the primary as well as neck disease the postoperative specimen sent for histopathological report was analysed. On analysing the specimens of neck dissection it was found that about 86% of them contained secondary carcinomatous deposits. This signifies the role of a neck dissection in controlling the metastatic neck disease in patients with oral cavity malignancy.

12. The incidence of extranodal disease on resected lymph nodes was 9% It signifies an important aspect that these patients with extranodal spread have

a biologically aggressive disease and these patients should be sent for adjuvant therapy and they should be followed up periodically.

13. In patients with clinically negative neck, selective neck dissection was performed according to the site of the primary. In this study patients with negative neck had primary in the tongue and buccal mucosa respectively. Hence supraomohyoid neck dissection was performed. After analysing the final histopathological report of neck dissection it was found that 83% of patients had secondary carcinomatous deposits in their resected specimens. This signifies that even in patients with clinically negative neck it is prudent to undergo selective neck dissection in order to achieve eradication of all occult nodal deposits. This improves the prognosis of patients much more and also improves overall survival of the patients.

14. Mean operating time for each type of neck dissection was analysed. The mean operating time was more for radical neck dissection because of complexity of the procedure. Estimated blood loss was also more for radical neck dissection compared to others. This signifies that radical neck dissection carries much more operative morbidity to the patient. This in turn affects the surgical results of the patient such as prolonged hospitalisation

and delayed recovery. This also increases the time taken for sending the patient to adjuvant therapy.

15. On analysing the major neurovascular structures removed during the procedure sternocleidomastoid muscle and internal jugular vein were removed during radical neck dissection. This adds a great morbidity to the patient . Patients undergoing such type of procedures should be properly informed preoperatively about the need to remove these structures during surgery if required. These patients should be counselled properly so that they can accept the postoperative morbidity associated with the procedure.

16. After surgery the methods of wound closure after surgery were analysed. Most of the patients required reconstructive procedures rather than primary closure stressing the importance of a reconstructive surgery .

17. On analysing the postoperative complications, hematoma or seroma formation, restricted neck mobility, cutaneous sensory loss were common.

18. Other complications such as facial edema, flap necrosis, shoulder dysfunction, prolonged ventilatory support occurred with much less frequency. This denotes the fact that in neck dissections a number of

postoperative complications can occur and early detection of these and management, greatly improves long term survival of the patients.

CONCLUSION

This is a descriptive study performed on 50 patients with oral cavity malignancy who undergo neck dissection in Rajiv Gandhi government general hospital. Patients with oral cavity malignancy who are candidates for surgery were chosen and patients are viewed preoperatively, intraoperative details were collected and they were reviewed postoperatively till the issue of final histopathological report. Based on this study certain important results were obtained.

In patients with oral cavity malignancy spread of the primary disease through the lymphatic channels in to the neck nodes occurs more frequently.

Proper clinical evaluation of the nodal status and investigation is essential for determining the stage of disease presentation and appropriate management.

The type of neck dissection performed is greatly dependant on location of the primary and the presence or absence of clinical node disease.

In patients with clinically negative neck, selective neck dissection greatly reduces the occult nodal disease improving the prognosis .

Presence of pathologically positive nodes, extranodal spread carries a significance in prognosis and in managing nodal disease in the neck for oral cavity malignancy.

Postoperative complications related to the procedure occurs in a certain number and is also of much significance .

To conclude neck node dissections done for oral malignancies forms an important surgical aspect of multimodality management.

KEY WORDS :

ORAL CANCER, NECK NODE DISSECTION, ULCEROPROLIFERATIVE, MODIFIED RADICAL NECK DISSECTION, RADICAL NECK DISSECTION, SELECTIVE NECK DISSECTION, FINE NEEDLE ASPIRATION CYTOLOGY, STERNOCLEIDOMASTOID, INTERNAL JUGULAR VEIN, ACCESSORY NERVE, HEMATOMA, SEROMA.

INTRODUCTION

Oral cancer is one of the commonest cancers encountered day to day among patients in India. In comparison to the western world oral cancer occurs more commonly among young Indian males .Oral cavity malignancy accounts for more morbidity and mortality among the cancer population in India.

Of the many sites of cancers of aerodigestive tract, oral cavity malignancy still forms a huge burden of cases in Indian population accounting for a considerable proportion of health problems encountered day to day.

Efficient management of oral cavity malignancy includes a multimodality approach of which the role of a surgeon is more significant.One of the key factors affecting prognosis and overallsurvival in oral cavity cancer is neck node status.Effective management of nodal metastasis in oral cavity cancers is the key to overall survival of the patient.The proportion of patients with node metastasis contributes a common problem in treating patients with oral cavity malignancies.

Neck node dissections done for managing the nodal metastasis in oral cavity malignancy is one of the important work done by a surgeon. In patients with oral cavity malignancy this greatly improves the survival of patients.

The purpose of this study is to analyse the various types of neck node dissection performed for patients with oral malignancy and compare their various clinical outcomes.

REVIEW OF LITERATURE

HISTORY :

The history of neck dissection dates a long time ago.

In 1847- Warren attempted removal of cancer in neck nodes.

In 1880 – Kocher attempted removal of tongue cancer through a submaxillaryapproach

MODERN ERA OF NECK DISSECTION :

- In 1990 – George Washington Crile first described classical Radical neck dissection
- In 1963 – Oswaldo Suarez proposed Modified Radical Neck Dissection
- In 1985 – Byers from M.D Anderson Cancer centre proposed selective neck dissection
- American academy of otolaryngologists classified different types of neck dissection in 1991 and revised it in 2002

ANATOMY

The entire lymph from head and neck drains into the cervical nodes directly or indirectly through the peripheral nodes.The peripheral nodes are arranged in superficial and deep circle.

The superficial group of cervical lymph nodes are :

1. Submental
2. Submandibular
3. Buccal
4. Preauricular (parotid)
5. Postauricular
6. Occipital
7. Anterior cervical
8. Superficial cervical lymph nodes

The deep cervical group of lymph nodes include

1. Prelaryngeal and pretracheal nodes
2. Paratrachealnodes
3. Retropharyngeal nodes

Cervical lymph nodes are classified according to the system developed by Memorial sloan- kettering cancer centre in the year 1930.

This system divides the neck nodes into various levels

- Lateral cervical nodes are named from levels 1 to 5
- Central compartment nodes are classified under level 6 and anterior mediastinal nodes under level 7
- Recently nodal levels of I, II and v were subclassified into level IA, IB,IIA,IIB and VA,VB respectively

LEVEL I :

Submental and Submandibular nodes.

level IA - submental node

level IB- submandibular node

Boundaries :

- Superior - Lower border of the body of mandible
- Posterior - Posterior belly of digastric
- Inferior - Hyoid bone

LEVEL II:

Upper Jugular Lymph Nodes

Boundaries :

- Superior - Base of skull
- Posterior - Posterior border of sternocleidomastoid muscle
- Anterior - Lateral limit of sternohyoid
- Inferior - Hyoid bone

LEVEL III:

Middle jugular lymph nodes

Boundaries :

- Superior - Hyoid bone
- Posterior - Posterior border of sternocleidomastoid muscle
- Anterior - Lateral limit of sternohyoid
- Inferior - Cricothyroid membrane

LEVEL IV :

Lower jugular lymph nodes

Boundaries :

- Superior - Cricothyroid membrane
- Posterior - Posterior border of sternocleidomastoid muscle
- Anterior - Lateral limit of sternohyoid
- Inferior - Clavicle

LEVEL V:

Posterior triangle lymph nodes

Boundaries :

- Anterior – posterior border of sternocleidomastoid
- Posterior – anterior border of trapezius
- Inferior- clavicle

LEVEL VI :

Anterior compartment of neck

Boundaries :

- Superior - Hyoid bone
- Inferior - Suprasternal notch
- Lateral - Medial border of carotidsheath on either side

LEVEL VII:

Superior mediastinal lymph nodes

Boundaries :

- Superior - Suprasternal notch
- Inferior - Innominate artery

Level II is subdivided into IIA and IIB nodes.

- II A - Lymph nodes below the accessory nerve
- IIB - Lymph nodes above the accessory nerve

Level V is subdivided into VA and VB nodes.

- VA - Lymph nodes above the accessory nerve
- VB - Lymph nodes below the accessory nerve

Regional lymphatic channels draining at a particular site is specific to particular organ.Lower lip,floor of the mouth,lower gum drain into level IA lymph nodes.Face,nose,paranasal sinuses, oral cavity, submandibular gland drain into level IB lymph nodes.

Oral cavity, oropharynx,nasopharynx,hypopharynx andsupraglottic larynx drain into upper jugular (level II) lymph nodes.

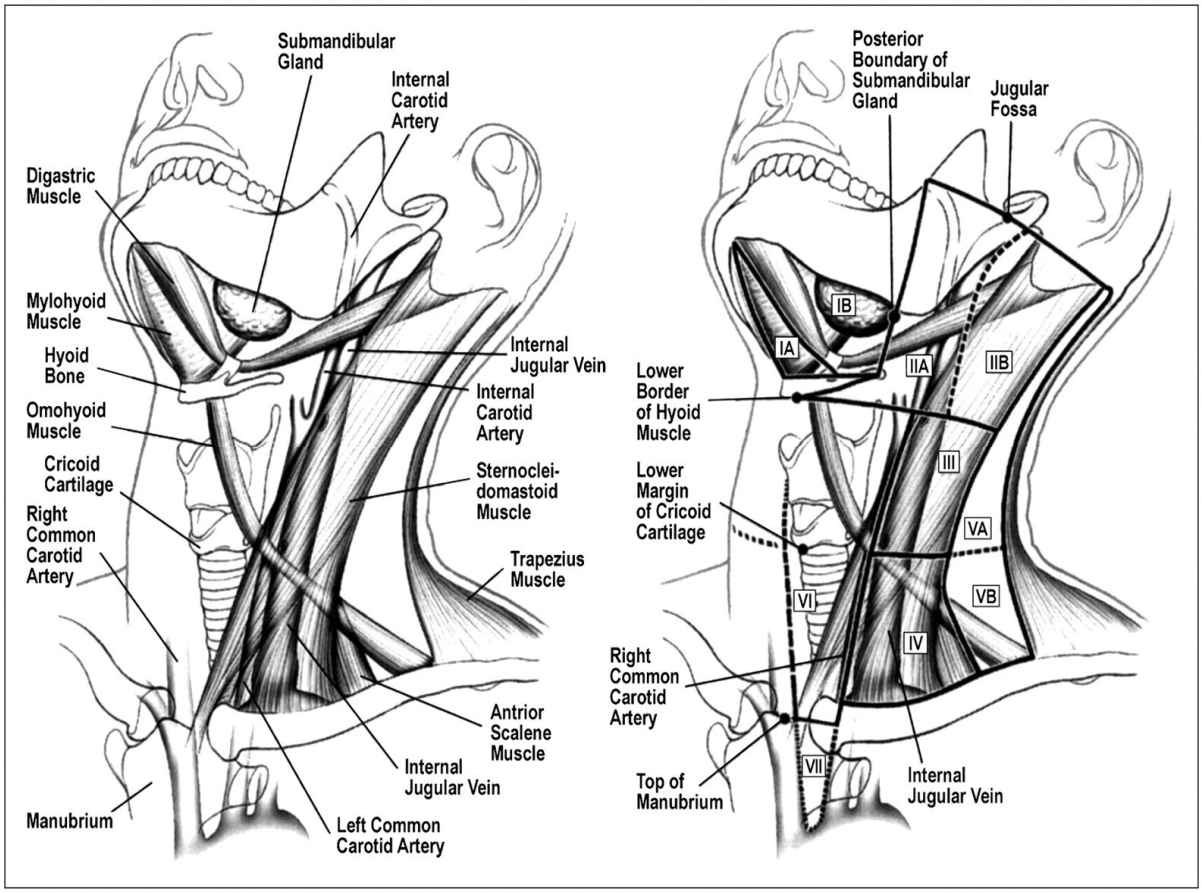
Larynx,hypopharynx,cervical esophagus drains into middle jugular (level III) lymph nodes.

Breast,thyroid,lungs drains into lower jugular (level IV)lymph nodes.Nasopharynx,thyroid,esophagus,lungs drains into posterior triangle (level V) lymph nodes.

Occipital nodes:Situated between the mastoid process and the external occipital protuberance.They drain the back of the scalp.

Posterior auricular nodes: Situated on the mastoid process behind the pinna.They drain the temporal region of the scalp,back of the pinna and external auditory meatus.

Preauricular nodes: Situated infront of the tragus and superficial to the parotid fascia.It drains the outer surface of pinna and side of the scalp .



Most malignant neoplasms of oral cavity arise from epithelial surfaceand hence they are mostly squamous cell carcinoma in nature.There could also be other variants of it like verrucous carcinoma,spindle cell carcinoma,lymphoepithelioma and undifferentiated carcinoma.Verrucous carcinoma is a lowgrade squamous cell carcinoma with an indolent growth pattern often found in gingival and buccal mucosa of oral cavity.

Lymphoepithelioma is a squamous cell carcinoma having a lymphoid stroma occurring in base of tongue,tonsillar fossa.In spindle cell variant there are spindlecells resembling sarcoma mixed with squamous cell carcinoma.Lymphomas occur rarely and mostly show a diffuse non-hodgkins lymphoma pattern.

Risk factors for neck node metastasis:

- Neck node metastasis are associated with a 50 % decrease in survival rate.
- In general the risk is more for posteriorly located tumours in the oral cavity.
- In general tumours of the oropharynx,hypopharynx,tonsils,base of the tongue have a higher incidence of nodal metastasis.
- Tumours of hypopharynx universally have nodal metastasis.

- Tumours arising from supraglottic larynx have more chance of nodal metastasis than glottic tumours.

Risk stratification for patients with clinically negative neck :

I.LOW RISK :

Estimated risk of subclinical neck disease :< 20%

Sites :

Floor of Mouth, Tongue, Retromolar, Trigone, Gingiva, Hard Palate, Buccal Mucosa in T1 Stage

II.INTERMEDIATE RISK :

Estimated risk of subclinical neckdisease : 20 – 30%

Sites :

Soft Palate, Pharyngeal Wall, Supraglotticlarynx,tonsil in T1 stage, Floor of mouth,tongue,retromolartrigone,gingiva,hardpalate,buccal mucosa in T2 stage

III.HIGH RISK GROUP :

Estimated risk of subclinical disease : >30%

Sites :

Nasopharynx, Pyriform sinus, Base of tongue in stages T1-T4,

Soft palate,pharyngeal wall,supraglottic larynx in stages T2-T4

Floor of the mouth, tongue,retromolartrigone,gingiva,hard palate,buccal mucosa in stagesT3-T4

Tumour biology of metastasis:

Significant improvement has been made inunderstanding the tumour biology of metastasis. Tumour cells gainaccess to the lymphatic system through the existing lymph channels in the proximity of tumour.Recent studies have shown that certain solid tumours induce lymphangiogenesis.vascular endothelial growth factor secreted by the tumour binds to VEGF-3 receptor expressed on the surface of lymphatic epithelial cells inducing lymphangiogenesis.cancer cells express certain gene specific products such as

1. Cellular adhesion molecules like E Cadherin which are down regulated making cancer cells to move freely

2. Integrinsare much expressed causing increased cellular motility

3. Elaboration of matrix metalloproteinases which act on the extracellular matrix facilitating migration of tumour cells. Active migration of cancer cells into lymphatics is caused by production of autocrine and paracrine cytokines which are mediated by integrin receptors.Tumour cells migration to lymphatic channels is mediated by L- Selectin , a migratory cell to cell interaction molecule.The environment in node is against the cancer cells with preponderance of immune effector cells and cytokines.Therefore immunoresistant clones are activated for establishing nodal metastasis.Once adapted to the environment of regional lymphatic channels these cells can invade the other parts of the lymphatic system with much ease.

BEHAVIOUR OF DISEASE WITHIN THE CERVICAL LYMPH NODES:

Multiple afferent vessels brings lymph into the lymphatic channelsbranching in the capsule of the node.Toker described four ways of growth of squamous cell carcinoma cells within the lymph nodes

1. Following initial tumour deposits in subcapsularsinus,growth of the malignant cells takes place and replaces the architecture of the node.After thatextracapsular spread occurs by direct penetration and destruction of capsule or by arresting further flow of lymphatics.

2. Metastatic deposits infiltrate the sinuses of lymphatics, leaving the germinal centres and trabeculae intact.Extracapsular spread occurs by direct penetration or due to the arrest of tumour emboli in capsular or juxtacapsularlymphatics.

3. A less common pattern is due to deposition of malignant embolus within the subcapsular sinus. This results in simultaneous and equal proliferation of cancer cells both inside and outside the lymph node.

4. Another pattern is that where capsular or juxtacapsular tumour emboli grow without any intranodal cancer growth.In this case extracapsular spread can occur much earlier in the course of the disease.

Metastatic involvement of lymphnodes can involve in an orderly fashion or some lymph node stations may be skipped causing skip lesions. Once tumour cells arrive at a draining lymph node they can proliferate or remain dormant or die or enter the circulation .

HEMATOGENOUS SPREAD :

From the node the efferent channels leave the hilum to join the terminal collecting vessels and ultimately drain into the venous system.There are other ways in which cancer cells can invade the blood stream.They can rarely enter blood stream directly from a node vascularization of tumour mass occurs when growth is greater than 1mm and as a result of this rapid growth of new vessels occurs and increased rates of vascular invasion occurs.

They may be released as a single cell or cell clumps or tumour emboli.In squamous cell carcinoma disseminated and circulating tumour cells in bone marrow and venous blood occur at a low frequency (one to five per 6x10 5 leukocytes).Because of this small number of circulating

cells low levels of tumour markers and gene expression transcripts are found in squamous cell carcinoma.

CLINICAL IMPLICATION OF METASTASIS :

The presence of regional lymph node spread acts as anindicator of theability of the primary tumour to metastasize locally and also to distant sites.The degree of lymphnode involvement is an indicator of systemic burden of the primary tumour.

Therefore elective removal of lymph nodes serves as a biopsy staging procedure to ascertain whether metastatic disease is present or not.It also identifies high risk patients who might benefit from systemic adjuvant therapy.This means that tumour free survival depends more on the biology of the tumour rather than the extent of the disease and resection performed.

This explains why patients with metastatic node have a reduced survival rate than node free disease .

LYMPHATIC DRAINAGE PATTERN OF ORAL CAVITY:

There are approximately 150 lymphnodes on either side of the neck.The oral cavity has a wide area of lymphatic drainage and this aspect isimportant as there is a freecommunication of lymphatics on either side of neck. Even normal act of mastication and swallowingpromotes early and rapid lymphatic spread directly into the neck.The posterior parts oforalcavity drain directly into upper deep cervical nodes (level ll or lll) or indirectly through the submandibular nodes (level lb).Anterior parts of the oral cavity and tongue also drain to these nodes, in addition may drain into the submental nodes or directly into the jugular nodal chain(level ll – lV).The tongue is particularly known to cause skip metastasis to level IV.

ASSESEMENT OF CERVICAL LYMPHADENOPATHY:

Neck assessment begins with a full clinical examination which may be supplemented by appropriate investigations.

CLINICAL EXAMINATION :

Clinical examination remains an important initial evaluation for assessing regional lymphnodes.In case of palpation of cervical lymphnodes aschematic pattern should be maintained.It starts from below,with supraclavicular group then moving upwards palpating the lymphnodes in the posteriortriangle,jugulo-omohyoid group,jugulodigastric group,submandibular,submental,preauricular andoccipital groups.

EXAMINATION OF THE DRAINAGE AREA :

If submental group is involved examine the chin,central part of the lip, gingiva,floor of the mouth and tip of the tongue.If submandibular group is involved examine the tongue,floor of the mouth,lower lip,cheek,palate,nose and antrum. In Involvement of jugular chain one should examine tongue,pharynx,larynx,upper esophagus and thyroid region.If the supraclavicular nodes are enlarged examine thearm,breast ,chest and abdomen upto to the testis.

CLINICAL PRESENTATION :

The swelling is painless to start with and grows rapidly in nodal metastasis . Usually there is no warmth and tenderness .The surface is nodular and the consistency is hard or stony hard.The swelling may be fixed to the skin and to the deeper structures at a later stage and becomes immobile at this stage.

2010 AMERICAN JOINT CANCER COMMITTEE ON CANCER STAGING FOR ORAL CAVITY PRIMARY TUMOURS :

TX	-	Primary tumour cannot be assessed
To	-	No evidence of primary tumour
T1	-	Tumour 2cm or less in greatest dimension
T2	-	Tumour more than 2 cm but not more than 4 cm in greatest dimension
T3	-	Tumour more than 4 cm in greatest dimension
T4a	-	Tumour invades adjacent structures (eg.,through cortical bone,into deep muscles of tongue,maxillary sinus, face etc)
T4b	-	Tumour invades masticator space,pterygoid plates, skull base and or encases internal carotid artery

2010 AMERICN JOINT CANCER COMMITTEE STAGING SYSTEM OF REGIONAL LYMPH NODES :

Nx	-	Regional lymph nodes cannot be assessed
NO	-	No Regional Lymphnode Metastasis

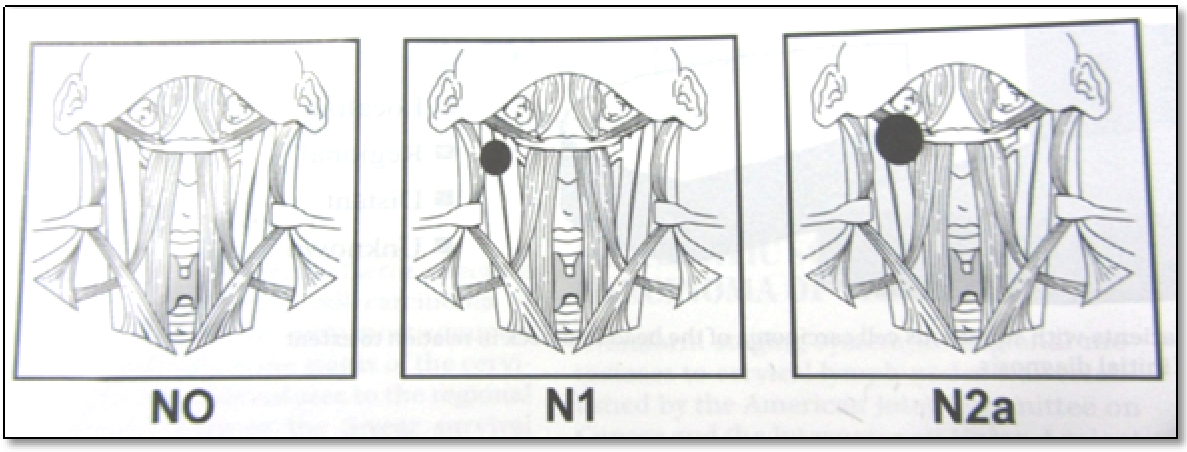
N1 - Metastasis in a single ipsilaterallymphnode 3 cm or less in greatest dimension

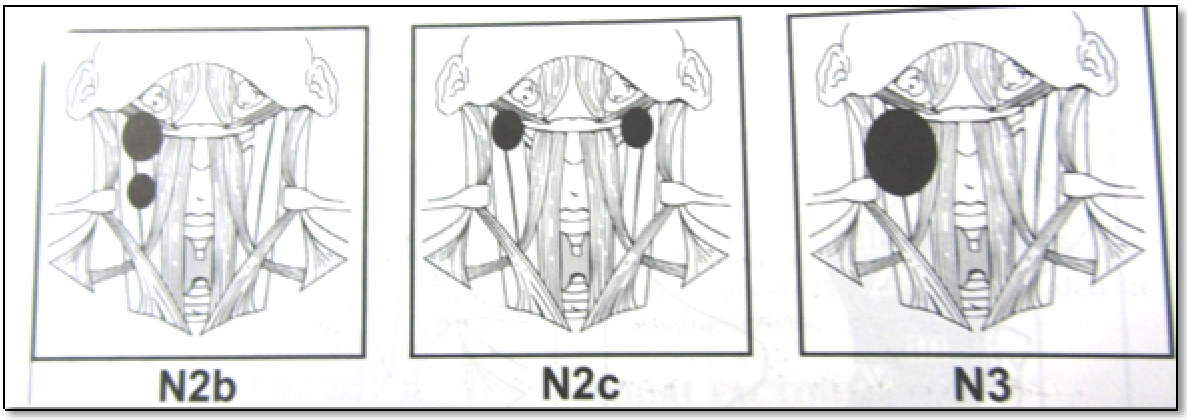
N2a - Metastasis in single ipsilateral node more than 3cm but not more than 6 cm in greatest dimension

N2b - Metastasis in multiple ipsilaterallymphnodes none more than 6 cm in greatest dimension

N2c - Metastasis in bilateral or contralateral lymph nodes none more than 6 cm in greatest dimension

N3 - Metastasis in a lymph node more than 6 cm in greatest dimension





2010 AMERICAN JOINT CANCER COMMITTEE OVERALL STAGING:

STAGE 0	Tis	No	Mo
STAGE I	T1	No	Mo
STAGE II	T2	No	Mo
STAGE III	T3	No	Mo
	T1-T3	N1	Mo
STAGE IVA	T4a	No-N1	Mo
	T1-T4a	N2	Mo
STAGE IVB	ANY T	N3	Mo
	T4b	ANY N	Mo
STAGE IVC	ANY T	ANY N	M1

HISTOLOGIC GRADE :

GX - Grade cannot be assessed

G1 - Well Differentiated

G2 - Moderately Differentiated

G3 - Poorly Differentiated

FINE NEEDLE ASPIRATION CYTOLOGY:

Mere presence of a palpable node clinically with a proven primary,evaluation should be directed towards the assessment of neck disease. However in many cases it is beneficial to do Fine Needle Aspiration Cytology on a palpable node for definitivemanagement.The technique isparticularly useful in the assesement of a palpable node when searching for an unknown primary.For example Human Papilloma virus or Epstein – Barr Virus transcripts or other surrogate markers point towards a primary site in the oropharynx or nasopharynx respectively.The Possibility of Anaplastic carcinoma or Lymphoma makes core Biopsy or Open Biopsy necessary. Fine needle aspiration cytology has an overall accuracy exceeding 90 percent .

ULTRASONOGRAM OF NECK :

This technique can detect presence of malignant cervical lymphnodes with sensitivity rates between 70 and 90 percent.However it is operator dependant andlabour intensive. There are no absolute criteria to differentiate malignant from benign disease but absent hilar echoes,increase in short axis length are generally considered to be features of metastatic nodes.Sonoelastography is a new technique where low amplitude,low frequency shear waves are propagated through internal organs while real time Doppler techniques are used to image the resulting vibrating pattern of

lymphnodes.The decrease in vibration amplitude caused due to the presence of non homogeneitywithin a tumour is measured.Ultrasound guided Fine needle aspiration cytology are very much helpful in neck disease.

COMPUTED TOMOGRAPHY :

The diagnostic accuracy of computed tomography in detecting malignant cervical nodes is higher than other methods. The range of nonmalignant cervical lymphadenopathy is between 3mm to 3cm but most authors recognize that nodes which are greater than 1 cm may contain metastatic disease.The criteria used for categorizing metastatic nodes are lymphnodes with short axis diameter larger than 1 cm,cluster of three or more borderline enlarged nodes larger than 0.8 cm and nodal necrosis or contrast enhancement within the nodes.The detection of malignant disease is based on the fact that as cancer cells invade the lymphnodesits size,shape and characteristics change.As the lymph node enlarges,its centre dies and appears necrotic and there is a thin rim of inflammation around the edge which is seen as rim enhancement.

INDICATIONS FOR ANATOMICAL NECK IMAGING :

- Primary tumour assessment
- Careful monitoring of No Neck
- Assess treatment response
- Assess the difficult necks like low volume disease,residual diseaseand recurrent disease following surgery and irradiation
- Restaging the recurrent tumours

MAGNETIC RESONANCE IMAGING :

Meta analysis suggest that this technique can detect cervical lymphadenopathy with overall accuracy rate similar to computerized tomography .However they are superior in evaluating N0 Neck and the presence of deeper invasion.

POSITRON EMISSION TOMOGRAPHY SCAN :

Positron emission tomography using 18-fluoro-2-deoxy-D-glucose as a radioactive tracer has proven efficient inthe functional imaging of neck secondaries.Tumour cells metabolize more glucose compared to normal tissue and therefore increased uptake of glucose analogue FDG can be imaged.Drawback of this technique is that exact anatomical location of

increased glucose metabolism is difficult to assess leading to decreased morphological information about the tumour.However combined modality of CT along with PET scan has improved diagnostic accuracy in metastatic neck disease.

CLASSIFICATION OF NECK DISSECTION :

RADICAL NECK DISSECTION :

Removal of lymphnodesin levels l to V and three non - lymphatic structures–spinal accessory nerve,internal jugular vein and sternocleidomastoid muscle.

MODIFIED RADICAL NECK DISSECTION :

Removal oflymphnodes in levels l to V with preservation of one or more of the three non - lymphatic structures.

Modified Radical Neck Dissection - Type I:

Lymphnode levels l to V are removed and Spinal Accessory nerve alone is preserved.

Modified Radical Neck Dissection - Type ll :

Lymphnode levels l to V are removed and Spinal accessory nerve and Sternocleidomastoid muscle is preserved.

Modified Radical Neck Dissection - Type III:

Lymphnode levels l to V are removed and Spinal Accessory nerve,Sternocleidomastoid muscle and Internal jugular vein arepreserved

SELECTIVE NECK DISSECTION:

It spares all the non - lymphatic tissues but rather selective removal of nodal regions at risk for malignancy is performed.

SUPRAOMOHYOID NECK DISSECTION:

Lymphnode levels l to lll are removed along with excision of the submandibular gland

EXTENDED SUPRAOMOHYOID NECK DISSECTION:

Lymphnode levels l to lV are removed along with excision of the submandibular gland

ANTERO LATERAL NECK DISSECTION :

Lymphnode levels ll to lV are removed

POSTEROLATERAL NECK DISSECTION :

Lymphnode levels ll to V including Suboccipital nodesare removed.

ANTERIOR OR CENTRAL COMPARTMENT DISSECTION:

Lymphnode levels VI and Vll including perithyroid,Delphian,trachea-esophageal groove and anterosuperiormediastinal nodes are removed.

EXTENDED RADICAL NECK DISSECTION :

Removal of one or more additional lymphatic and non lymphatic structures in addition to radical neck dissection.Eg.,LevelVII nodes,Retropharyngeal nodes,Hypoglossal nerve,Skin of neck etc.

MANAGEMENT OF ORAL CAVITY MALIGNANCY:

Stages I and II

Single modality therapy is usually effective. Surgery and radiotherapy are effective but in most cases surgery is preferred for early stage disease. Whichever modality is chosen , the treatment of primary site and neck should be done together . In planning resection surgeon must plan route of access, margin status, bone involvement etc., Route of access is preferably transoral approach. The margins must be clearly visible all around. Occasionally a lip split or mandibulotomy is required for visualization of margins. Marginal clearance of 2 cm on all sides must be given.

Bone is not grossly involved in stage l and 2 lesions. In general the periosteum is an effective barrier if not previously irradiated. If the tumor is freely mobile with relation to the bone, the periosteum is resected and the underlying bone is preserved. When tumor directly invades the periosteum that segment of the bone should be resected such as a rim mandibulectomy. The risk of micrometastasis is greater for tumors with invasion of more than 4mm and therefore neck dissection should be considered for these tumors even if it is clinically negative neck.

Stages III and IV

Large oral cavity cancers and that deeply invade the tongue, bone or adjacent spaces requires multimodal management. Primary surgical resectionremains an option here. Surgical treatment of the neck to control lymphatic disease and to provide adequate access to the primary tumor is routine. Exposure of the neck allows preservation of neurovascular structures and it also facilitates the resection of deeper margins of primary tumor. Clinically No neck is treated with a selective neck dissection. Gross invasion of mandible requires segmental resection of mandible. The entire medullary cavity should be resected whenever possible. Often after resection of the primary, reconstruction is required. Vascularised free tissue transfers has become the main stay of surgical reconstruction. Soft tissue defects are closed with radial forearm flap,foreheadflap,deltopectoral flap etc., Mandibular defects are closed with osteocutaneous flaps.

CARCINOMA IN SITU OR MICROINVASIVE CARCINOMA

Early very superficial carcinoma is treated by Wide local Excision.Microinvasive Carcinoma should be excised with a 1 to 2 cm margins all around.Primaryclosure of the site is optional if it can be done

without tethering the tongue or obliteratingthe gingivobuccal sulcus.Healing by secondary intention is preferable to a closure that restricts mobility.

TECHNIQUES OF NECK DISSECTION :

Modified Radical neck dissection is the mostcommonly employed neck dissection for cancers of the oral cavity. Modified radical neck dissection (MRND) is a modification of the radical neck dissection described by Crile. It includes the en bloc removal of all node-bearing tissues in the anterior and posterior cervical triangles, the tail of the parotid gland, the submandibular gland, and cervical sensory nerves with sparing of one of all of the following structures: the sternocleidomastoid (SCM)muscle, the internal jugular vein (IJV), and the spinalaccessory nerve (SAN).

PREOPERATIVE PREPARATION :

Patient should be prepared asfor any major operation with adequateevaluation by an anaesthesiologist before surgery.Preoperatively the patient is explained about the risks and complications of the procedure.Elective tracheostomy may be required in patients with bilateral neck node dissection.Prophylactic antibiotics should be started 24 hours before ,covering all spectrum of organisms like aerobes and anaerobes.

POSITION OF PATIENT DURING SURGERY

The patient is placed in a supine position with head end elevated to 30 degrees and the neck is hyperextended and turned to the opposite side.A sand bag or inflatable rubber bag is placed under the shoulders.

INCISION :

For modified radical neck dissection a single trifurcate incision is adequate.The goals that should be achieved by an adequate skin incision are – assure adequate vascularity of the flaps,adequate exposure of the surgical field, should consider the location of primary tumour,adequate protection of major neurovascular structures,consider factors such as preoperative radiotherapy, should facilitate reconstructive surgery if needed, should include previous scars or incisions for biopsies and produce acceptable cosmetic results.

TECHNIQUE OF NECK DISSECTION:

Skin incision is made and deepened through the subcutaneous tissue and through the platysma muscle.Flap is elevated posteriorly initially upto the anterior border of trapezius.During this procedure posterior triangle fat pad is not entered to avoid injuring the spinal accessory nerve.Spinal accessory nerve is identified as it passes beneath the trapezius muscle in the lower part of neck or it lies l cm superior to Erb's point.

The nerve is dissected from trapezius till the posterior border of sternocleidomastoid muscle.The muscle is retracted cephalad and the nerve is dissected along the lateral border of internal jugular vein upto its exit under the posterior belly of digastric at the jugular foramen. Superior attachment of sternocleidomastoid is detached from mastoid process and the fibro fatty tissue in supraaccessory triangle is dissected from lateral to medial direction.Tissue is further dissected from splenius capitis and levator scapulae muscle.Fibrofatty tissue isdissected from accessory nerve and from the rest of the posterior triangle.posterior scalene muscle is exposed and inferior belly of omohyoid is divided.

Transverse cervical vessels are encountered which are ligated.Then middle scalene muscle isexposed and then anterior scalene muscle is exposed with Brachial plexus in between them.Phrenic nerve is identified on the anterior scalene muscle and preserved. Numerous cutaneous cervical rootlets are encountered which are divided.Specimen is retracted medially allowing internal jugular vein,commoncarotid artery and vagus nerve to be exposed.

Then anterior skin flap is elevated upto midline superiorly and to the medial end of sternocleidomastoid inferiorly.Lateral border of strap muscles is retracted medially and the carotid sheath is exposed and opened and

common carotid artety,internal jugular vein and vagus nerve are dissected .Internal jugular vein is divided and doubly ligated.

Lateral to the vein thoracic duct on the left side and unnamed lymphatics on the right side are divided with ligatures to prevent chyle leakage.soft tissue including sternocleidomastoid and internal jugular vein is retracted and dissected away from vagus nerve and common carotid artery.Middle thyroid vein entering the medial aspect of internal jugular vein is ligated.Cephalad hypoglossal nerve is identified and preserved.

Anteromedially anterior belly of omohyoid muscle is divided from its attachment with the hyoid bone.The superior skin flap is then elevated.The fascia on the inferior aspect of submandibular gland is dissected. Marginal mandibular branch of facial nerve anterior to the submandibular fascia is protected.The posterior facial vein is ligated and stump retracted protecting the nerve.

Along the lower border of the mandible,dissection iscontinued and prevascular facial lymphnodes are removed.The facial vein and artery are divided on the posterosuperior aspect of the submandibular gland.soft tissue in the submandibular and submental triangle is dissected .Neurovascular bundle to mylohyoid muscle is divided and ligated.submandibular gland is

mobilized from its bed and mylohyoid muscle is retracted superomedially and lingual nerve is identified and preserved.

Then submandibular duct is divided and ligated.The proximal portion of the facial artery is divided on the posteromedial aspect of the posterior belly of digastric muscle.small pharyngeal veins here need to be divided and ligated.Posterior belly of digastric muscle is retracted cephalad and occipital artery and vein are divided and ligated allowing exposure of the internal jugular vein at the skull base.

The internal jugular vein is skeletonised and doubly ligated and the specimen delivered out.Meticulous hemostasis is achieved and wound irrigated with saline.Suction drains are placed through a separate stab incision in the neck – one drain is placed along the anterior border of trapezius muscle and another drain is placed along the strap muscles medial to the carotid artery.The incision is then closed in two layers using interrupted sutures for platysma and skin.

SUPRAOMOHYOID NECK DISSECTION:

Skin incision is made about two finger breadth below the inferior border of the mandible.Incision is deepened through the platysma. Superior flap is elevated and dissection of submandibular and submental triangle isdone as for MRND.Inferior flap is elevated till the posterior border

ofsternocleidomastoid laterally and its sternal attachments inferiorly.spinal accessory nerve is separated from underlying muscle and dissected.

Lymph nodes lying in Level II are dissectedand separated from spinal accessory nerve.Phrenicnerve is identified and preserved. Carotid sheath is exposed medially and retracted. Soft tissues including level II and III nodes are dissected off the internal jugular vein.The anteromedial limit is the superior belly of omohyoid muscle. Superior thyroid vein,common facial vein draining into internal jugular vein are divided and ligated.The hypoglossal nerve is identified and preserved.The specimen encompassing levels I to III is delivered.wound is closed in layers.

ANTEROLATERAL NECK DISSECTION:

This involves dissection of levels II to IV.It is usually carried out as a staging procedure along with excisionof carcinoma of pharynx or larynx in a patient with clinically negative disease.Transverse incision is madeat the level of the thyrohyoid membrane extending from posterior border of sternocleidomastoid muscleupto midline.

After elevating flaps in subplatysmal plane, fascia on the anterior border of sternocleidomastoid muscle is incised and underlying jugular lymphnodes are removed.The omohyoid muscle is divided and level lV nodes are removed.Lymphnodes in level II to IV are removed as in

supraomohyoid neck dissection.Specimen is left attached to the primary tumour or removed separately and wound is closed in layers.

POSTEROLATERAL NECK DISSECTION:

Hockey stick incision is used extending from mastoid tip along the anterior border of trapezius ending just superior to the clavicle.Anterior skin flap is elevated upto the anterior border of sternocleidomastoid muscle.Spinal accessory nerve is identified and preserved.Dissection of posterior triangle lymphnodes is done. Sternocleidomastoid muscle is retracted medially and level II, III, IV nodes are removed.

In order to include postauricular and suboccipitallymphnodes a lateral extension of incision is made from the mastoid process to the occipital tubercle.Trapezius muscle is detached from its nuchal attachment and lymphnodes in suboccipital triangle are removed.After complete hemostasis wound is closed in layers.

ORIENTING SPECIMEN FOR PATHOLGICAL EXAMINATION:

The three important strategies to obtain a high pathological yield are toensure that adequate clinical information is communicated,mention any special pathological information required and orient the resected specimen for pathologist.The specimen can be pinned to a cork or polystyrene blocks with colour pins for each level of nodes.

Alternatively separate the nodal groups, mark the superior margin of each group with a suture and place each group in a separate container.Surgically important borders are marked with an Indian ink or a dye and sent.If it is feasible photograph of the resected specimen can be sent .

ADVANTAGES OF ELECTIVE NECK DISSECTION :

- The high incidence of occult metastatic disease
- Selective neck dissection has low morbidity and mortality
- Routine clinical follow up cannot detect early conversion from No to N1 in all patients
- Untreated neck metastasis increases the incidence of distant metastasis
- The control rate for neck disease decreases if gland enlargement occurs or multiple lymphnodes appears
- Elective neck surgery can be done during primary surgery
- The pathological neck node status can be used to guide prognosis
- The presence of multiple occult metastasis can dictate adjuvant radiation.

COMPLICATIONS OF NECK DISSECTION:

INTRAOPERATIVE :

- Hemorrhage due to internal jugular vein or carotid artery or transverse cervical vessels or mylohyoid vessels injury
- Air embolism : intraoperatively due to internal jugular vein injury
- Phrenic nerve palsy: delayed recovery and prolonged ventilatory support

POSTOPERATIVE COMPLICATIONS:

- Reactionary hemorrhage
- Pulmonary atelectasis,pneumothorax
- Dyspnoea,stridor and ineffective cough
- IJV Ligation – raises intracranial pressure causing headache,nausea and vomiting
- Flap necrosis and skin loss
- Drooping of shoulders due to injury to spinal accessory nerve
- Difficulty in speech and hypoaesthesia due to lingual nerve injury
- Facial edema due to interrupted venous and lymphatic drainage
- Pain in the neck due to division of nerve rootlets causing traumatic neuroma
- Prolonged ventilatory support due to reduced lung compliance and phrenic nerve injury
- Sensory loss in the skin from pinna to clavicle due to injury to the sensory branch of cervical plexus
- Gustatory sweating (Frey's syndrome)

- Asymmetry of corner of mouth and drooling of saliva due to injury to marginal mandibular branch of facial nerve
- Cervical sympathetic plexus injury- Horner's syndrome
- Carotid artery exposure causing carotid blowout
- Persistent chyle leak and chylous fistula due to thoracic duct injury
- Recurrence of the tumour

AIM OF THE STUDY

The purpose of this study is to analyze the various types of neck node dissection done for patients with oral malignancy and compare their effectiveness in treating nodal metastasis

OBJECTIVES

- To analyze the various types of neck node dissection done for patients with oral malignancy

- To study about various clinical aspects of nodal metastasis like incidence of nodal metastasis and extracapsular extension.

- To analyse the incidence of postoperative complications arising from the procedure

MATERIALS AND METHODS

STUDY CENTRE :

Madras Medical College and Rajiv Gandhi Government General Hospital,Chennai

SUBJECT SELECTION **:** Randomly selected

STUDY DESIGN **:** Prospective Study

DURATION OF STUDY **:** 6 months

INCLUSION CRITERIA:

Patients undergoing neck node dissection surgery for oral cavity malignancy.

EXCLUSION CRITERIA : None

SAMPLE SIZE : 50 Cases

METHODOLOGY:

The study will be a prospective one and patients who are candidates to undergo neck node dissection are selected.Their clinical

findings,diagnosis and staging, method of neck dissection, complications, histopathological results will be studied upon .

SCREENING VISITS :

Before the surgical procedure to record clinical details and investigations, preoperative staging of disease

SURGERY :

All relevantintroperative details necessary for the study are recorded

FOLLOW UP VISITS :

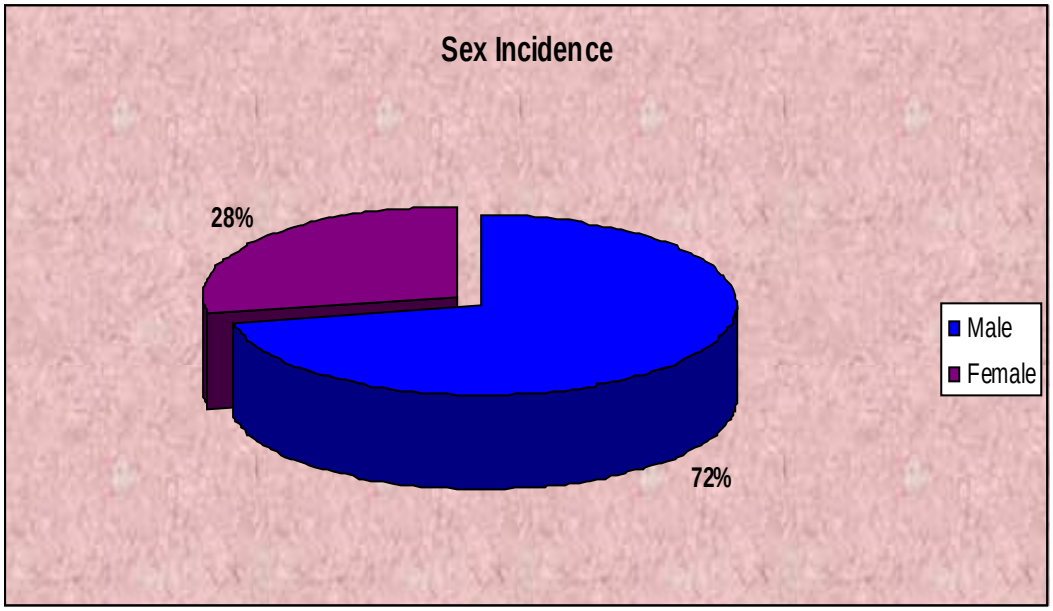
Patients are reviewed periodically till they are discharged and again reviewed when the biopsy report is issued .

Using these clinical data various statistical parameters would be analysed and results were obtained.

DATA ANALYSIS AND INTERPRETATION

SEX INCIDENCE

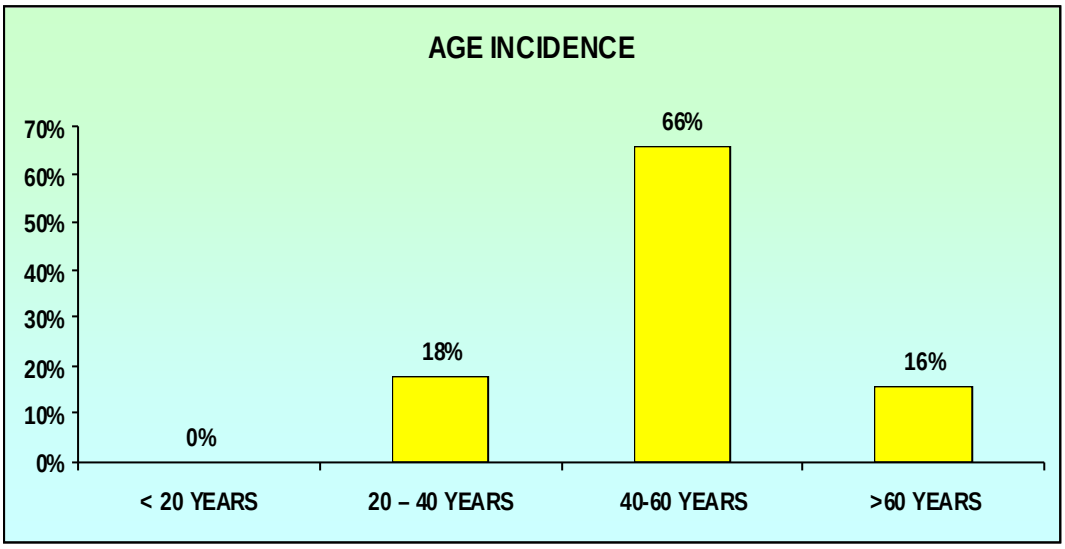
MALE	FEMALE
72%	28%



Oral cavity malignancy is more common in men than women.In this study patients affected were predominantly male patients than female patients which is in concordance with the literature.

AGE INCIDENCE

AGE OF PATIENT	NUMBER OF CASES
< 20 YEARS	O
20 – 40 YEARS	9(18%)
40-60 YEARS	33(66%)
>60 YEARS	8(16%)

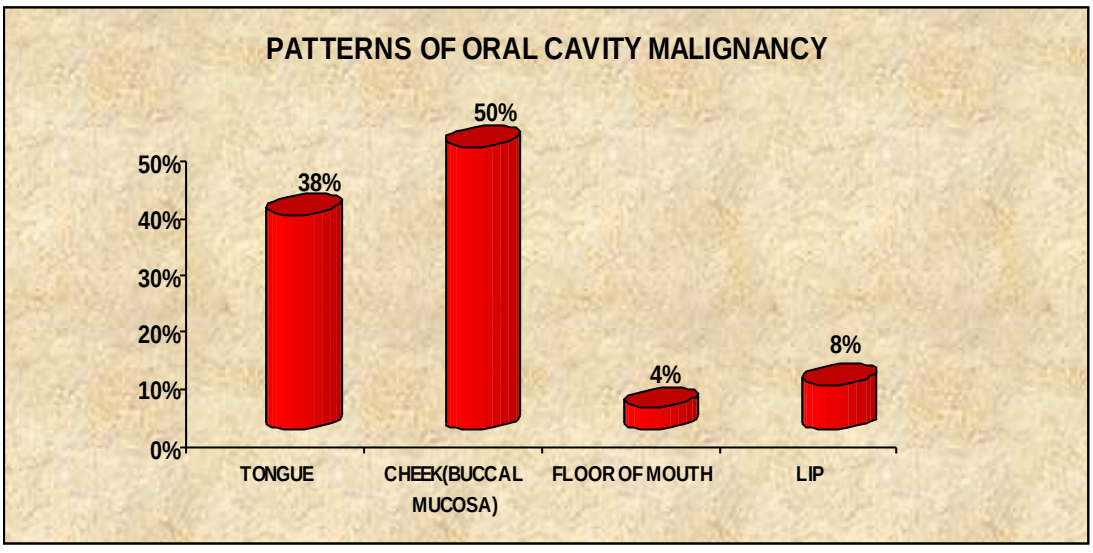


In this study population on the age group of 40 to 60 years were affectedpredominantly followed by population in the age group of 20 to 40 years.This pattern of occurrence signifies two important Facts.

1. The age group affected predominantly was between 40 to 60 years .
2. There is a raising incidence of oral cavity malignancy in the younger age group due to a multitude of reasons.

PATTERNS OF ORAL CAVITY MALIGNANCY

SITE OF LESION	PERCENTAGE OF CASES
TONGUE	19(38%)
CHEEK(BUCCAL MUCOSA)	25(50%)
FLOOR OF MOUTH	2(4%)
LIP	4(8%)



In this study the sites more commonly affected are cheek followed by tongue then lip and floor of the mouth.

This depicts that carcinoma of the buccal mucosa including the gingivobuccalcomplex is the most common site of occurrence of oral cavity malignancy and is in concordance with the Indian statistics.

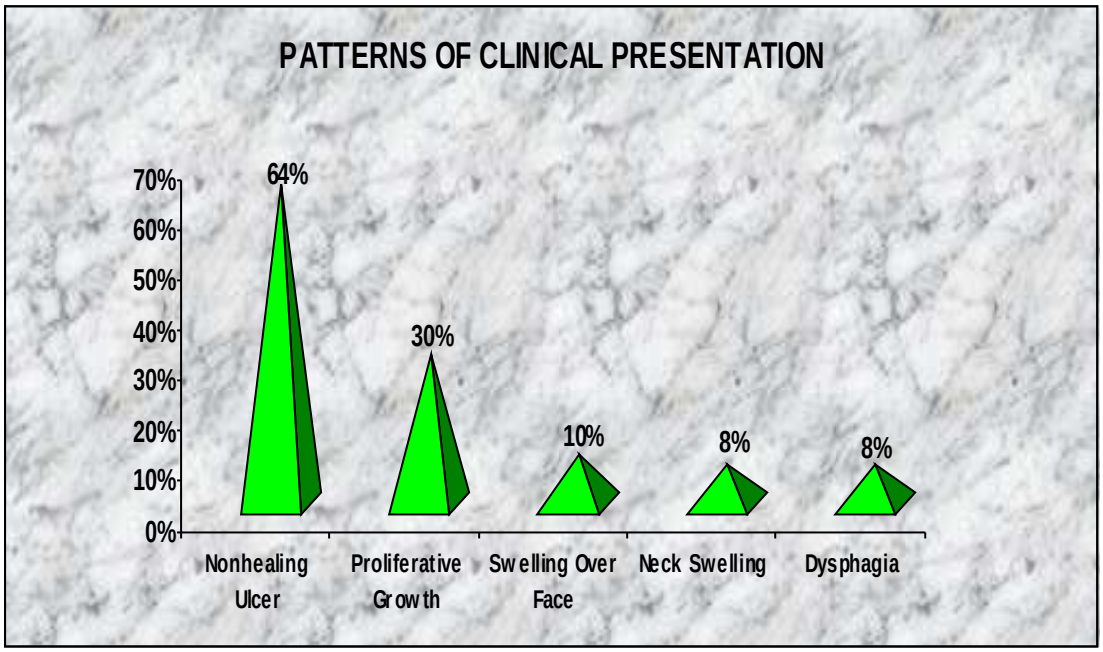
Carcinoma of the tongue comes next because of its early presentation and easy detectability by clinical examination.

Other sites of occurrence such as lip,floor of the mouth have also been reported.

Remote sites like retromolartrigone,palate have not occurred in the study population.

PATTERNS OF CLINICAL PRESENTATION:

CLINICAL FEATURE	NUMBER OF CASES	PERCENTAGE
NONHEALING ULCER	32	64%
PROLIFERATIVEGROWTH	15	30%
SWELLING OVER FACE	5	10%
NECK SWELLING	4	8%
DYSPHAGIA	4	8%



The patterns of presentation also varied among the study population.The analysed group of patients mostly had an ulcerative lesion in the oral cavity or a proliferative lesion in the oral cavity or an ulceroproliferative pattern of growth.

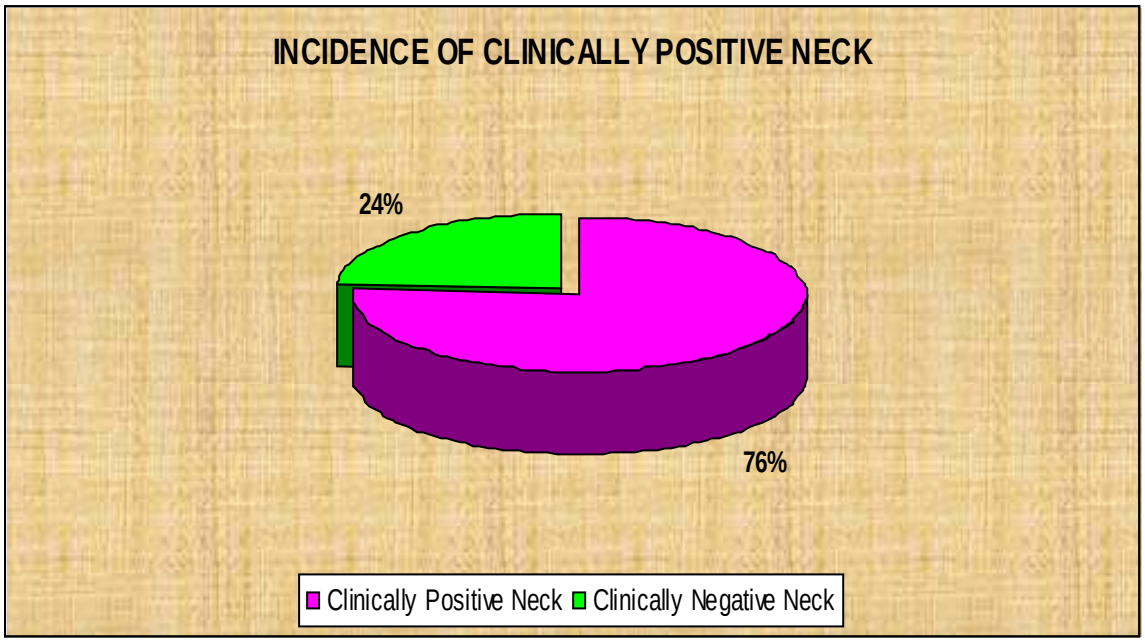
Some patients presented with swelling over the face due to local infiltration of the lesion .

In about 8 percentage of patients neck swelling was the initial presentation and on further clinical examination these patients had a lesion in the oral cavity which was detected by clinical examination and these patients were informed about the cause for the neck swelling and were treated accordingly.

Few patients presented with dysphagia initially.In the study population certain patients also had other features like drooling of saliva,halitosis,trismus etc.But these features were not the patients prime complaints and these symptoms were identified on further questioning the patientsabout the symptomatology.

INCIDENCE OF CLINICALLY POSITIVE NECK :

CLINICALLY POSITIVE NECK	38	76%
CLINICALLY NEGATIVE NECK	12	24%

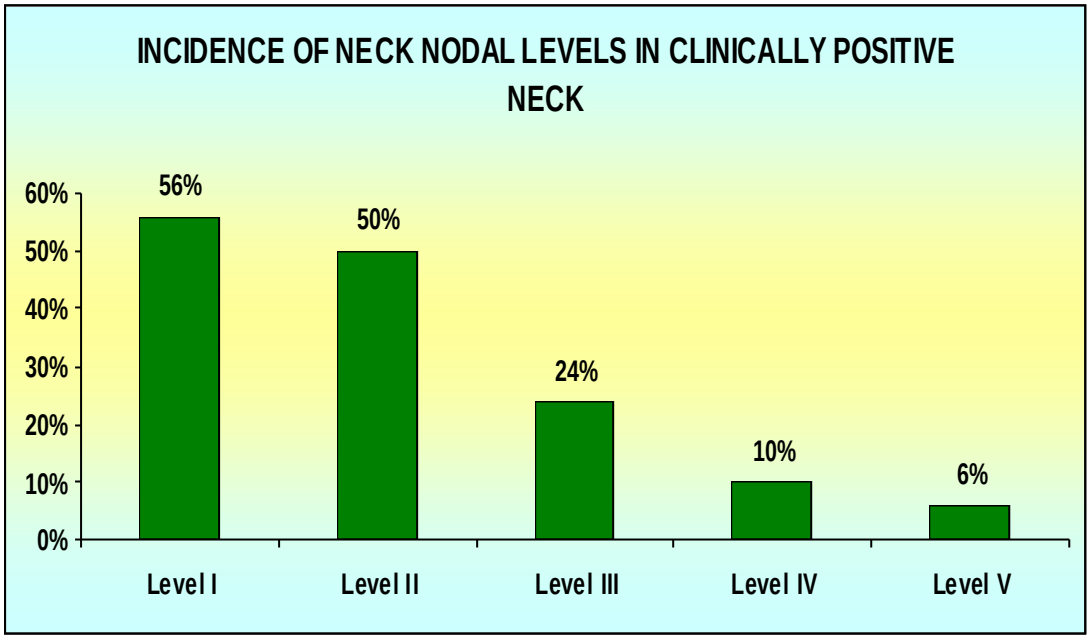


In the study population about 76% of patients had palpable neck nodes on clinical examination.24% of patients had no palpable neck nodes on clinical examination.

This signifies the importance of occurrence of neck node metastasis in oral cavity malignancy as the prime mode of metastasis.

INCIDENCE OF NECK NODAL LEVELS IN CLINICALLY POSITIVE NECK :

NECK NODE LEVELS	NUMBER OF CASES	PERCENTAGE
LEVEL I	28	56%
LEVEL II	25	50%
LEVEL III	12	24%
LEVEL IV	5	10%
LEVEL V	3	6%

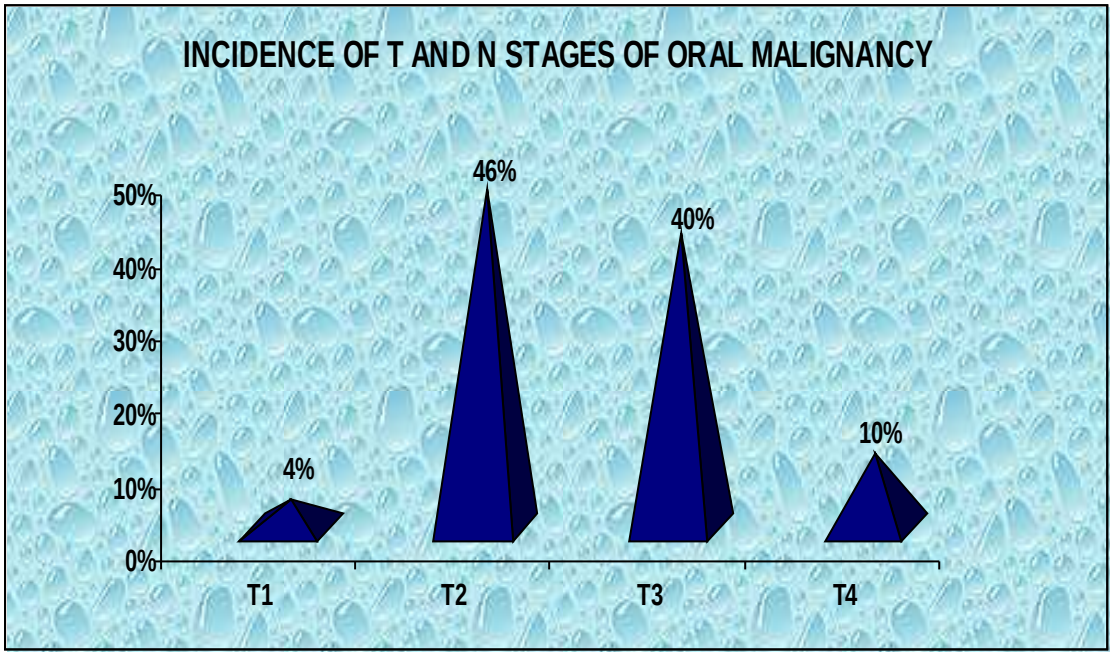


Among the various nodal levels affected in the neck region level l ,ll and lll were the most frequently affected levels in oral cavity malignancies.As these levels were frequently affected in patients with oral cavity malignancy , in patients with oral malignancies these lymphnode levels should be carefully looked for the presence of a palpable node which has a

significance in staging,management and prognosis of these patients.

INCIDENCE OF T AND N STAGES OF ORAL MALIGNANCY:

T STAGING	CASES	PERCENTAGE
T1	2	4%
T2	23	46%
T3	20	40%
T4	5	10%

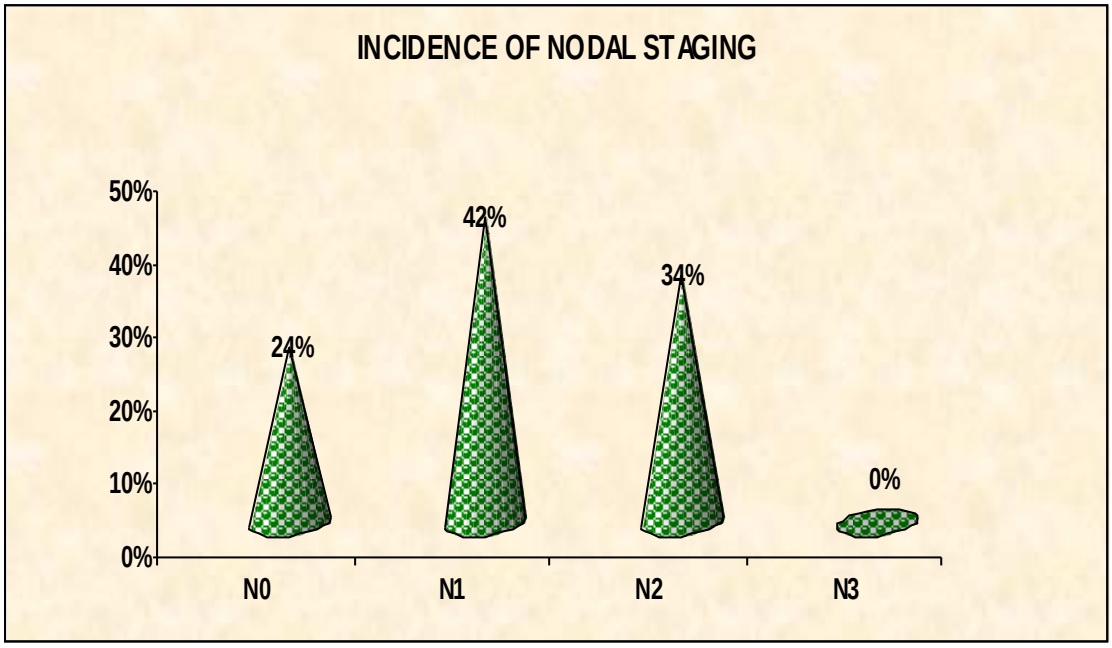


Of the T staging most patients had stages T2 and T3 in the oral cavity which accounted for their early detection both by the patient and the consultant surgeon in comparision the smaller T1 lesions.

T staging also has certain prognostic significance in contributing to depth and extent of primary tumour and its management modality.

INCIDENCE OF NODAL STAGING

NODAL STAGE	CASES	PERCENTAGE
N0	12	24%
N1	21	42%
N2	17	34%
N3	0	0%



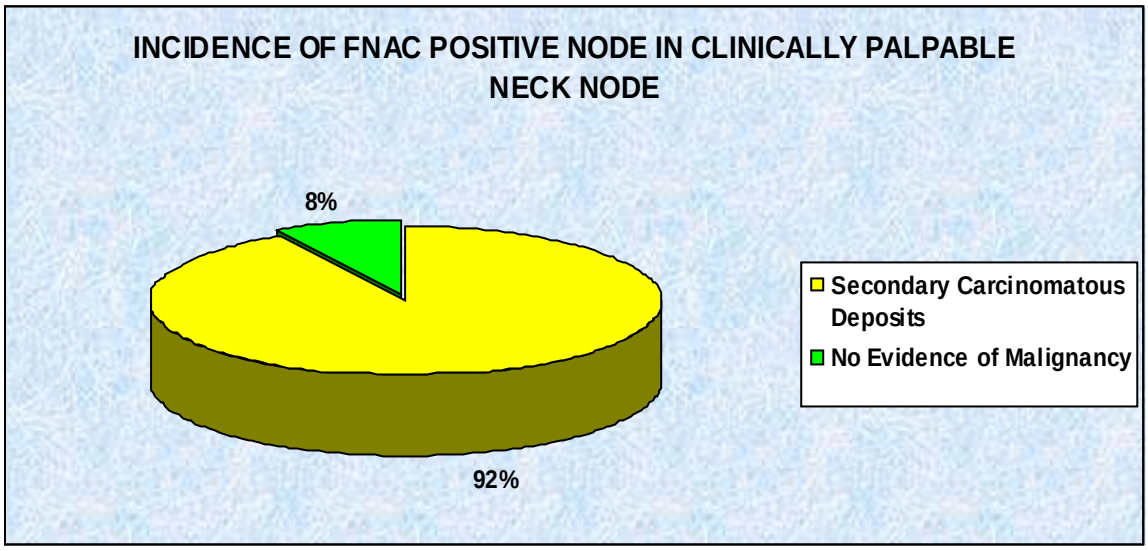
In the study population patients had N1 nodal staging most commonly,the N2 stage followed by N1.

The presentation of patients with nodal staging in oralcavity malignancy has an important role in planning specific modality of nodal management along with the primary tumour .

INCIDENCE OF FNAC POSITIVITY IN CLINICALLY PALPABLE NECK NODE :

NUMBER OF CLINICALLY POSITIVE NECK CASES	38

FNAC REPORT	CASES	PERCENTAGE
SECONDARY CARCINOMATOUS DEPOSITS	35	92%
NO EVIDENCY OF MALIGNANCY	3	8%

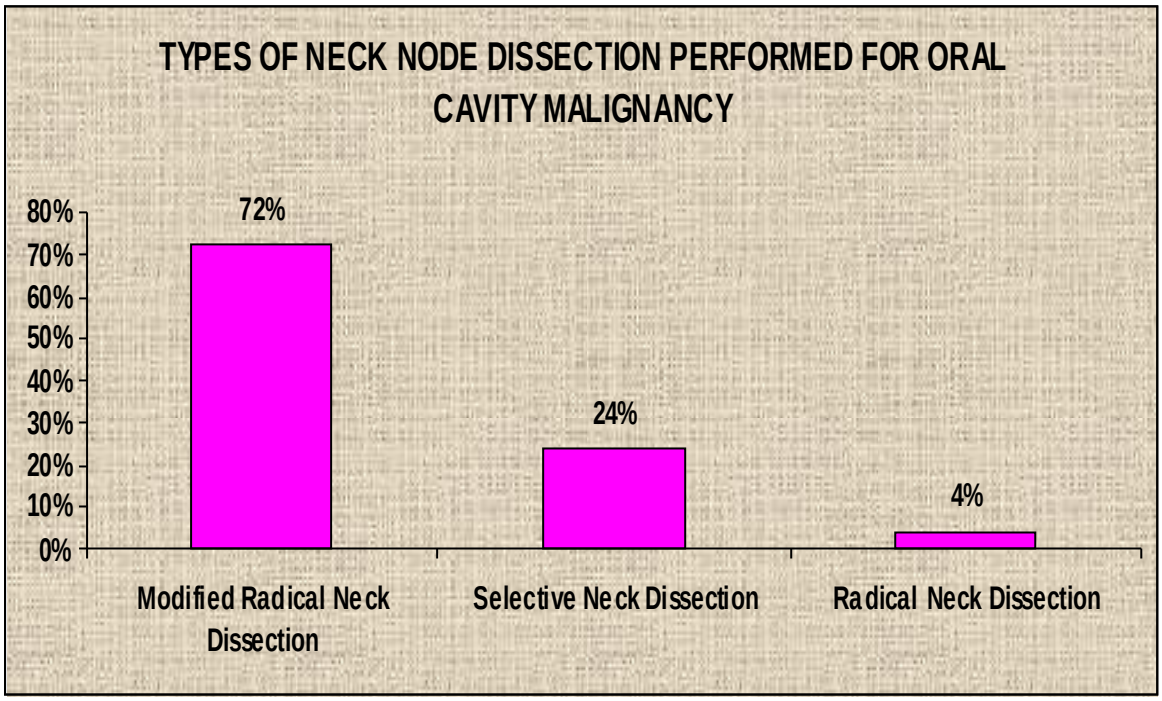


In patients with clinically palpable nodes about 92% had FNAC proven secondary carcinomatous deposits .

This depicts the importance of simple investigations like FNAC as an important tool to the diagnosis of secondary nodal deposits in patients with oral cavity carcinoma

TYPES OF NECK NODE DISSECTION PERFORMED FOR ORAL CAVITY MALIGNANCY :

NAME OF THE SURGERY	NUMBER OF CASES	PERCENTAGE
MODIFIED RADICAL NECK DISSECTION	36	72%
SELECTIVE NECK DISSECTION	12	24%
RADICAL NECK DISSECTION	2	4%



Among the various types of neck node dissection for oral cavity malignancy patients mostly underwent Modified radical neck dissection followed by Selective neck dissection and Radical neck dissection.The choice of type of nodal dissection to be performed has an importantimplication in the prognosis and the overall survival of the patient and also the need for adjuvant therapy.

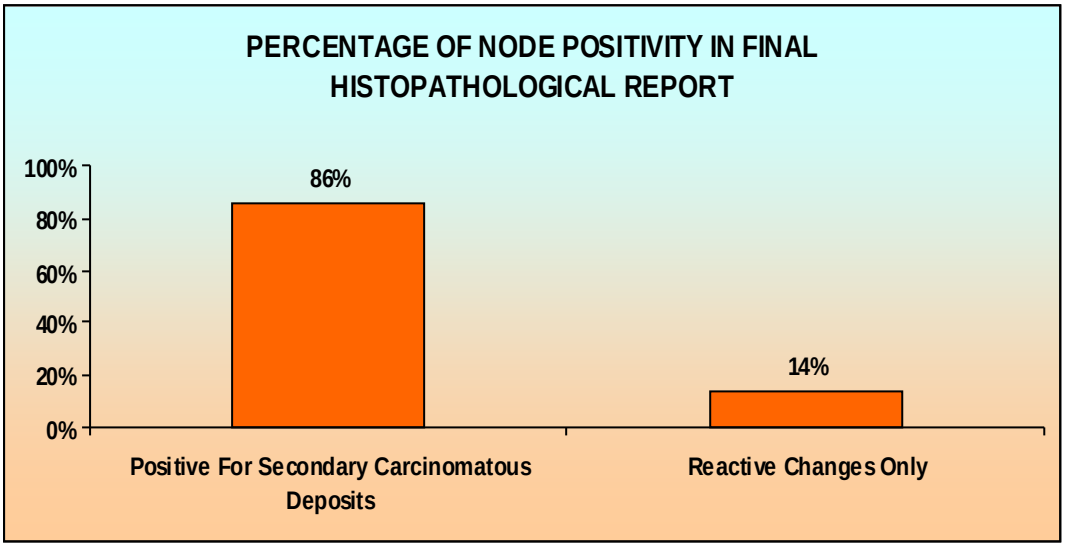
TYPE OF NECK DISSECTION PERFORMED

ACCORDING TO THE NODAL STATUS:

CLINICAL NODAL STATUS	TYPE OF NECK DISSECTION	NUMBER OF CASES
CLINICALLY POSITIVE NECK	MODIFIED RADICAL NECK DISSECTION	36
CLINICALLY POSITIVE NECK	RADICAL NECK DISSECTION	2
CLINICALLY NEGATIVE NECK	SELECTIVE NECK DISSECTION	12

PERCENTAGE OF NODE POSITIVITY IN FINAL HISTOPATHOLOGICAL REPORT :

HPE REPORT	NUMBER OF CASES	PERCENTAGE
POSITIVE FOR SECONDARY CARCINOMATOUS DEPOSITS	43	86%
REACTIVE CHANGES ONLY	7	14%



Patients were operated for both the primary tumour and the neck nodes at the same time and their resected specimens, which were sent for histopathological analysis were studied .

Patients neck node dissection specimens were studied carefully and about 86% of patients had secondary carcinomatous deposits in their postoperativespecimens.This provided an important data which justifies the importance of neck node dissection in patients with node disease along with an oral cavity primary malignancy.

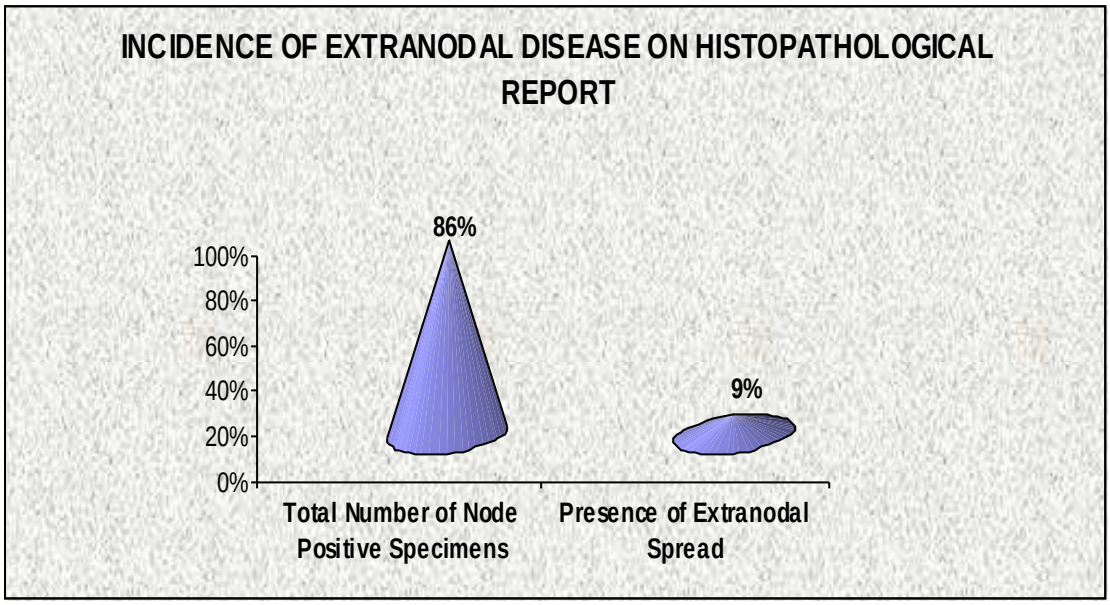
INCIDENCE OF NODE POSITIVITY IN FINAL HISTOPATHOLOGICAL REPORT FOR CLINICALLY NEGATIVE NECK :

HPE REPORT	NUMBER OF CASES	PERCENTAGE
SECONDARY CARCINOMATOUS DEPOSITS	10	83%
REACTIVE CHANGES ONLY	2	17%

In patients with clinically negative neck who underwent selective neck node dissection about 83% had positive nodes on final histopathological report. This provided an important data which justifies the rationale of selective neck node dissection in patients with clinically negative neck.

INCIDENCE OF EXTRANODAL DISEASE ON HISTOPATHOLOGICAL REPORT

	CASES	PERCENTAGE
TOTAL NUMBER OF NODE POSITIVE SPECIMENS	43	86%
PRESENCE OF EXTRANODAL SPREAD	4	9%

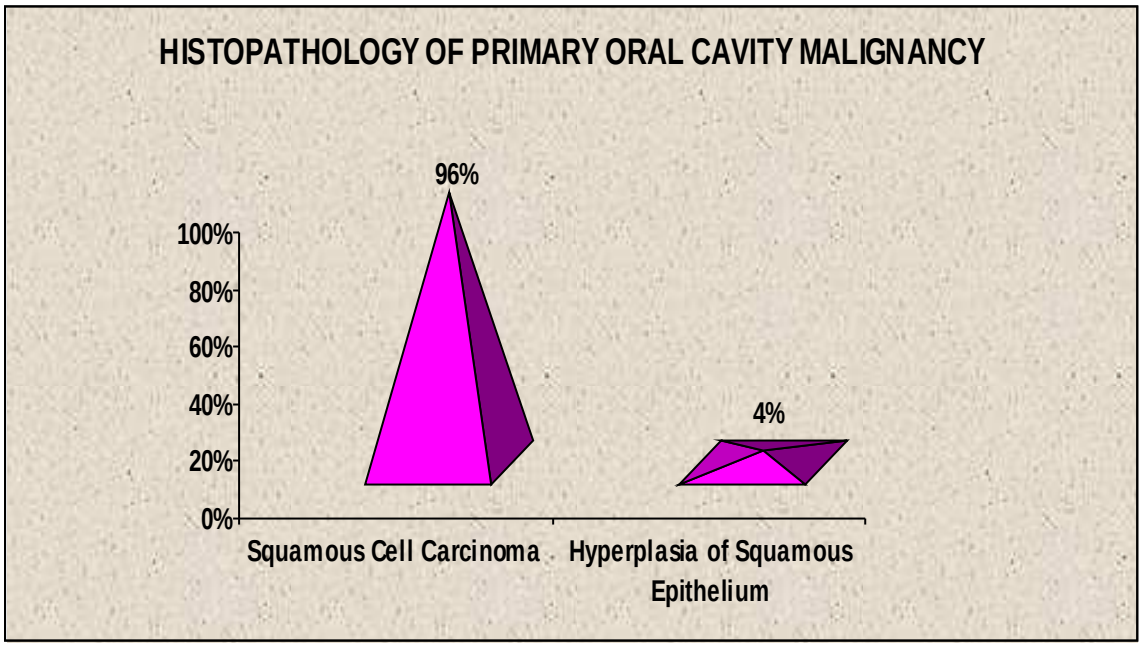


In the postoperative specimen of neck node dissection another important parameter studied was the presence of extranodal spread of disease. About 9 percentage of resected specimens had extranodal spread of disease thus contributing to the additional value of nodal spread and its prognostic significance.

HISTOPATHOLOGY OF PRIMARY ORAL CAVITY MALIGNANCY

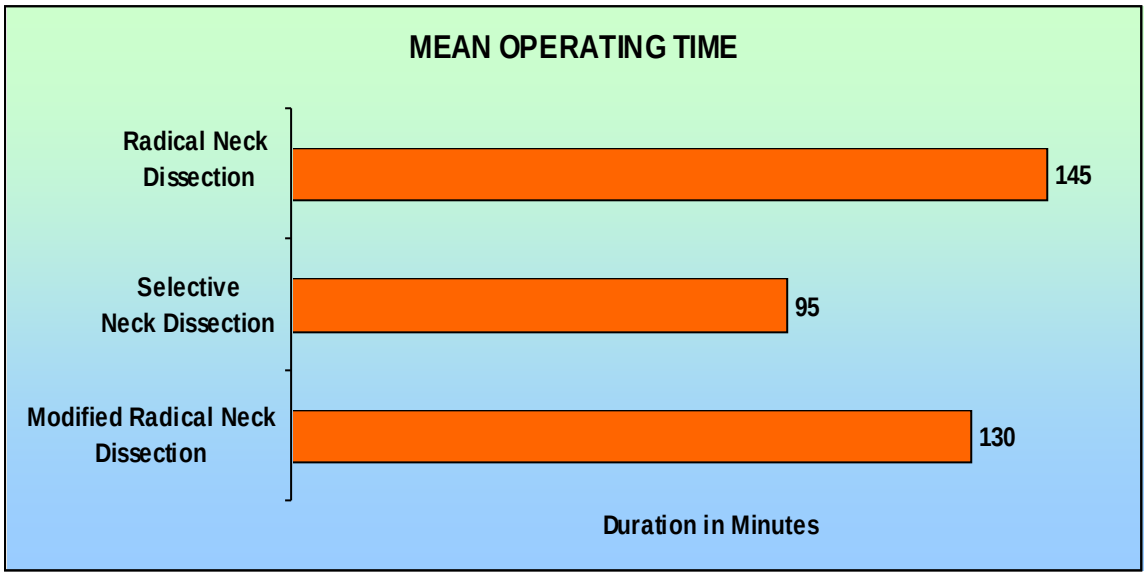
HISTOPATHOLOGY	CASES	PERCENTAGE
SQUAMOUS CELL CARCINOMA	48	96%
HYPERPLASIA OF SQUAMOUS EPITHELIUM	2	4%

In the histopathology of resected primary tumour about 96 percent had squamous cell carcinoma and the rest had hyperplastic squamous epithelium.This is in concordance with the literature that squamous cell carcinoma is the predominant histopathological type of oral cavity malignancy.



MEAN OPERATING TIME :

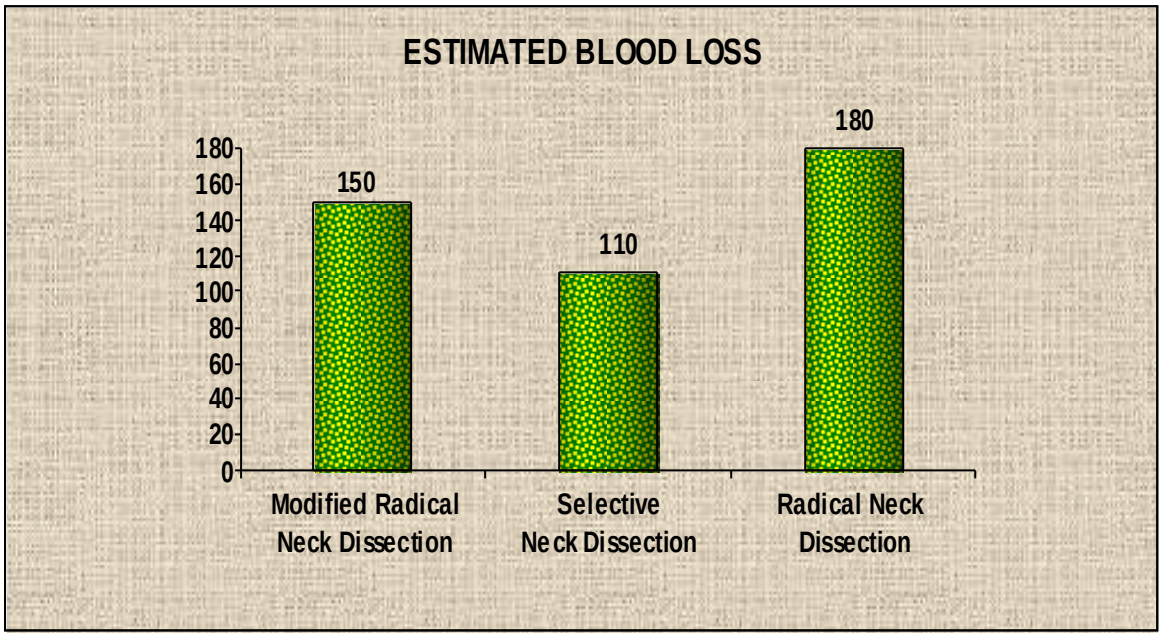
TYPE OF NECK DISSECTION	MODIFIED RADICAL NECK DISSECTION	SELECTIVE NECK DISSECTION	RADICAL NECK DISSECTION
DURATION	130 MINUTES	95 MINUTES	145 MINUTES



The average operating time of each type of neck node surgery were also estimated in the study.Modified radical neck dissection and Radical neck dissection had certainly consumed more duration because of the complexity of the surgery and the need to preserve certain vital neurovascular structures for the benefit of patient undergoing surgery.

ESTIMATED BLOOD LOSS :

TYPE OF NECK DISSECTION	MODIFIED RADICAL NECK DISSECTION	SELECTIVE NECK DISSECTION	RADICAL NECK DISSECTION
AVERAGE ESTIMATED BLOOD LOSS	150 ml	110 ml	180 ml



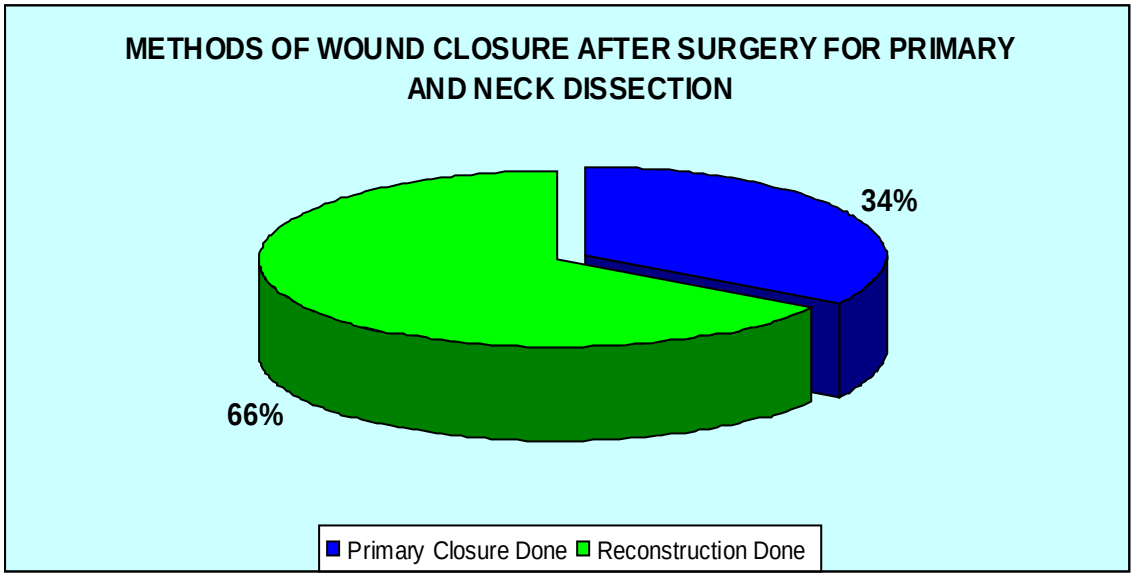
Estimation of intraoperative blood loss was assessed for each patient and each surgery and based on these certain data were calculated.Radical neck dissection had certainly much more blood loss compred to other surgeries stressing the sacrifice of major neurovascular structures during the procedure and also the patient related morbidity associated with the procedure.

MAJOR NEUROVASCULAR STRUCTURES COMPROMISED DURING NECK DISSECTION

TYPE OF SURGERY	MODIFIED RADICAL NECK DISSECTION		SELECTIVE NECK DISSECTION		RADICAL NECK DISSECTION	
	Preserved	Removed	Preserved	Removed	Preserved	Removed
STERNOCLEIDOMASTOID MUSCLE	**36**	**0**	**12**	**0**	**0**	**2**
SPINAL ACCESSORY NERVE	**36**	**0**	**12**	**0**	**2**	**0**
INTERNAL JUGULAR VEIN	**36**	**0**	**12**	**0**	**1**	**1**

METHODS OF WOUND CLOSURE AFTER SURGERY FOR PRIMARY AND NECK DISSECTION

METHOD	CASES	PERCENTAGE
PRIMARY CLOSURE DONE	17	34%
RECONSTRUCTION DONE	33	66%



After the surgery for primary and neck node dissection primary closure was performed in 34 percentage of cases and about 66 percentage required reconstruction in the form of flaps to cover thedefect after surgery.

INCIDENCE OF POSTOPERATIVE COMPLICATIONS

COMPLICATION	CASES	PERCENTAGE
HEMATOMA/SEROMA	12	24%
WOUND DEHISCENCE	3	6%
FLAP NECROSIS	8	16%
SHOULDER DYSFUNCTION	7	14%
RESTRICTED NECK MOBILITY	21	41%
CUTANEOUS SENSORY LOSS	15	30%
CAROTID EXPOSURE AND BLOWOUT	1	2%
FACIAL EDEMA	7	14%
PULMONARY ATELECTASIS	2	4%
HORNERS SYNDROME	0	0%
PERSISTENT CHYLURIA	0	0%
PROLONGED VENTILATORY SUPPORT	8	16%
ASSYMETRY OF ANGLE OF MOUTH	1	2%
DEEP VEIN THROMBOSIS	3	6%

Among the various postoperative complications encountered restricted neck mobility,hematoma/seroma formation,facial edema, wound dehiscence and shoulder dysfunction were encountered in the study group of patients .These complications were studied individually specific to each patient and were summed up together.

Other complications like asymmetry of angle of the mouth, ventilator dependency, carotid blowout, persistent chyluria,pulmonary atelectasis,cutaneous sensory loss,flap necrosis,deep vein thrombosis were also reported in the study population.

DISCUSSION

1. In this study male patients are affected more commonly than female depicting the fact that harmful practices related to tobacco usage and alcohol consumption are widely prevalent among the male populationthus placing them at risk for carcinoma of the oral cavity.

2. The age incidence of oral malignancies were mostly 40 to 60 years.But it is important to note that age group of 20 to 40 years comes next rather than others and this should be looked upon with caution because the incidence of oral cavity malignancy is on the rise in younger individuals due to the widespread availability and increased usage of tobacco products andreduced awareness among them.

3. Oral cavity carcinoma occurred more commonly in the buccal mucosa including gingivobuccal complex due to the habit of keeping tobacco products like pan,quid etc in the gingivobuccal sulcus causing chronic irritation leading ultimately to malignancy.

4. Among the patterns of presentation of oral malignancy, Non healing ulcer,proliferative growth or an ulceroprolierative growth was the commonest mode of presentation.

5. Most of the patients had clinically palpable nodes along with the primary during routine clinical neck examination.This signifies that presence of nodal pathology in oral cavity malignancy acts as a significant factor both in management and prognostication.

6. Among the clinically palpable nodes levels I,IIand III were the levels most commonly clinically palpable nodes in carcinoma of oral cavity.This again denotes the varied lymphatic drainage pattern of oral cavity primary and the need to address the nodal metastasis by performing modified radical neck dissection,selective neck dissection and radical neck dissections.

7. In general for malignancies of oral cavity with clinically palpable nodes modified radical neck dissection should be performed on the primary lesion side and either a selective neck dissection on the other side.In general lesions in midline or close to the midline are dealt with selective neck dissection on both sides in clinically negative neck or modified radical neck dissection on both sides in clinically palpable neck nodes.Radical neck dissection is performed when the nodal staging is higher like N3 or in patients with advanced lesions who underwent preoperative radiotherapy.

8. Regarding the clinical stage of patients most of the patients had T2 and T3 stage of primary oral cavitycancer.when nodal stage was analysed most of the patients had N2 and N3 status.This signifies that oral cavity malignancy is detected quite at an earlier stage facilitating an effective cure to the affected population.

9. Fine needle aspiration cytology was positive in 92 percent of patients with clinically palpable neck nodes. Hence FNAC is an important initial diagnostic modality in detecting secondary deposits in palpable nodes. But clinically palpable node in a patient with oral cavity primary should be considered as a metastatic deposit and fine needle aspiration cytology further confirms it.

10. Regarding the type of procedure performed for neck nodes modified radical neck dissection was done more commonly followed by selective neck dissection and radical neck dissection respectively. Modified radical neck dissection was performed on patients with early stage and clinically palpable neck nodes. Selective node dissection was performed in patients with clinically negative neck according to the site of primary lesion. Radical neck dissection was performed in patients with advanced nodal stage in order to achieve

complete resection of tumour burden thereby improving the survival of the patients.

11. After surgery for the primary as well as neck disease the postoperative specimen sent for histopathological report was analysed. On analysing the specimens of neck dissection it was found that about 86% of them contained secondary carcinomatous deposits. This signifies the role of a neck dissection in controlling the metastatic neck disease in patients with oral cavity malignancy.

12. The incidence of extranodal disease on resected lymphnodes was 9% It signifies an important aspect that these patients with extranodal spread have a biologically aggressive disease and these patients should be sent for adjuvant therapy and they should be followed up periodically.

13. In patients with clinically negative neck, selective neck dissection was performed according to the site of the primary. In this study patients with negative neck had primary in the tongue and buccal mucosa respectively. Hence supraomohyoid neck dissection was performed. After analysing the final histopathological report of neck dissection it was found that 83% of patients had secondary carcinomatous deposits in their resected specimens. This signifies that

even in patients with clinically negative neck it is prudent to undergo selective neck dissection in order to achieve eradication of all occult nodal deposits. This improves the prognosis of patients much more and also improves overall survival of the patients.

14. Mean operating time for each type of neck dissection was analysed.The mean operating time was more for radical neck dissection because of complexity of the procedure. Estimated blood loss was also more for radical neck dissection compared to others. This signifies that radical neck dissection carries much more operative morbidity to the patient. This inturn affects the surgical results of the patient such as prolonged hospitalisation and delayed recovery. This also increases the time taken for sending the patient to adjuvant therapy.

15. On analysing the major neurovascular structures removed during the procedure sternocleidomastoid muscle and internal jugular vein were removed during radical neck dissection. This adds a great morbidity to the patient . Patients undergoing such type of procedures should be properly informed preoperatively about the need to remove these structures during surgery if required. These patients should be

counselled properly so that they can accept the postoperative morbidity associated with the procedure.

16. After surgery the methods of wound closure after surgery were analysed. Most of the patients required reconstructive procedures rather than primary closure stressing the importance of a reconstructive surgery .

17. On analysing the postoperative complications, hematoma or seroma formation,restricted neck mobility,cutaneous sensory loss were common.

18. Other complications such as facial edema,flap necrosis,shoulder dysfunction,prolonged ventilatory support occurred with much less frequency. This denotes the fact that in neck dissections a number of postoperative complications can occur and early detection of these and management ,greatly improves longterm survival of the patients.

CONCLUSION

This is a descriptive study performed on 50 patients with oral cavity malignancy who undergo neck dissection in Rajiv Gandhi government general hospital. Patients with oral cavity malignancy who are candidates for surgery were chosen and patients are viewed preoperatively, intraoperative details were collected and they were reviewed postoperatively till the issue of final histopathological report. Based on this study certain important results were obtained.

In patients with oral cavity malignancy spread of the primary disease through the lymphatic channels in to the neck nodes occurs more frequently.

Proper clinical evaluation of the nodal status and investigation is essential for determining the stage of disease presentation and appropriate management.

The type of neck dissection performed is greatly dependant on location of the primary and the presence or absence of clinical node disease.

In patients with clinically negative neck, selective neck dissection greatly reduces the occult nodal disease improving the prognosis .

Presence of pathologically positive nodes, extranodal spread carries a significance in prognosis and in managing nodal disease in the neck for oral cavity malignancy.

Postoperative complications related to the procedure occurs in a certain number and is also of much significance .

To conclude neck node dissections done for oral malignancies forms an important surgical aspect of multimodality management.

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ANNEXURES

PROFORMA

PATIENT DETAILS ON ADMISSION:

Name :

Age :

Sex :

Personal history :

Risk factors present :

CLINICAL EXAMINATION:

- Examination of oral cavity
- Examination of neck

INVESTIGATIONS:

Complete Haemogram

Renal Function Test

Liver Function Test

Blood Grouping and Typing

Biopsy Report

USG Neck

STAGE OF DISEASE: (At first diagnosis)

INTERVENTION DONE:

DETAILS OF INTERVENTION:

Type of Neck dissection performed :

Type of incision used :

Operating time (minutes) :

Approximate Blood Loss (ml) :

Major neurovascular structures sacrificed for oncological clearance:

Primary closure performed :

Primary reconstruction done :

POST OP :

Any complications due to surgery :

- Mortality with 48 hours:
- Respiratory distress :
- Hematoma / Seroma formation :
- Wound necrosis / dehiscence :
- Neurological deficit :
- Shoulder dysfunction :
- Other complications :

Post-operative stay in hospital (days) :

HISTOPATHOLOGICAL SPECIMEN REPORT:

Margin positivity :

Number of nodes harvested :

Number of positive nodes :

Ratio between positive nodes / total nodes harvested :

Pre-operative FNAC/Biopsy report :

Post-operative Histopathology report :

PATIENT CONSENT FORM

Study Detail	:	**"CLINICAL STUDY ON NECK NODE DISSECTIONS FOR ORAL MALIGNANCIES PERFORMED IN RAJIV GANDHI GOVERNMENT GENERAL HOSPITAL"**
Study Centre	:	Rajiv Gandhi Government General Hospital, Chennai.
Patient's Name	:	
Patient's Age	:	
In Patient Number	:	

I confirm that I have understood the purpose of procedure for the above study. I have the opportunity to ask question and all my questions and doubts have been answered to my complete satisfaction.

I understand that my participation in the study is voluntary and that I am free to withdraw at any time without giving reason, without my legal rights being affected.

I understand that sponsor of the clinical study, others working on the sponsor's behalf, the ethical committee and the regulatory authorities will not need my permission to look at my health records, both in respect of current study and any further research that may be conducted in relation to it, even if I withdraw from the study I agree to this access.

However, I understand that my identity will not be revealed in any information released to third parties or published, unless as required under the law. I agree not to restrict the use of any data of results that arise from this study.

I agree to take part in the above study and to comply with the instructions given during the study and faithfully cooperative with the study team and to immediately inform the study staff if I suffer from any deterioration in my health or well being or any unexpected or unusual symptoms.

I hereby consent to participate in this study.

I hereby give permissions to undergo complete clinical examination and diagnostic tests including haematological, biochemical, radiological and histopathological tests.

Signature / thumb impression
Patient's Name and Address :

Signature of Investigator
Study Investigator's Name :
Dr. P. SARAVANAN

சென்னை மருத்துவக் கல்லூரி

ஆராய்ச்சி தகவல் தாள்

நம் சென்னை மருத்துவ கல்லூரி மருத்துவமனைக்கு வரும் நோயாளிகளிடையே வாய் புற்றுநோய்க்கான அறுவை சிகிச்சை பற்றி ஒருஆராய்ச்சி இங்கு நடைபெற்று வருகின்றது.

நீங்களும் இந்த ஆராய்ச்சியில் பங்கேற்க நாங்கள் விரும்புகின்றோம். இந்த ஆராய்ச்சியில் அறுவை சிகிச்சைக்கு பிறகு உங்களுடைய திசுக்களை எடுத்து சில பரிசோதனைகளுக்கு உட்படுத்தி அதன் பேரில் சில தகவல்களை அறிவோம். இதனால் தங்கள் நோயின் ஆய்வறிக்கையோ நோய்க்கான சிகிச்சையோ சிறிதும் பாதிப்புக்கு உள்ளாகாது என்பதையும் தெரிவித்துக் கொள்கிறோம்.

முடிவுகளையோ அல்லது கருத்துக்களையோ வெளியிடும் போதோ அல்லது ஆராய்ச்சியின் போதோ தங்களின் பெயரையோ தங்களை பற்றிய தகவல்களையோ வெளியிடமாட்டோம் என்பதையும் தெரிவித்துக்கொள்கிறோம்.

இந்த ஆராய்ச்சியில் பங்கு கொள்வது தங்களின் விருப்பத்தின் பேரில் தான் இருக்கின்றது. மேலும் தாங்கள் எந்த நேரமும் இந்த ஆராய்ச்சியில் இருந்து பின் வாங்கலாம் என்பதையும் தெரிவித்துக் கொள்கிறோம்.

பங்கேற்பாளர் கையொப்பம்

இடம் :

தேதி :

ஆராய்ச்சியாளர் கையொப்பம்

ஆராய்ச்சியாளர் பெயர் :

மரு. பொ. சரவணன்

S. No	NAME	AGE	SEX	IPNO	SITE OF ORAL CAVITY CANCER	PRESENTING FEATURE	CLINICALLY PALBALE NODE	FNAC	NECK DISSECTION	HPE POSITIVE NODE	EXTRANODAL SPREAD	WOUND CLOSURE
1	THULASI	60	FEMALE	68842	CHEEK	ULCER	PRESENT	POSITIVE	MRND	PRESENT	ABSENT	RECONSTRUCTION
2	UNNIKRISHNAN	44	MALE	56728	CHEEK	ULCER	PRESENT	POSITIVE	MRND	PRESENT	ABSENT	RECONSTRUCTION
3	DUBAIRUDEEN	38	MALE	63144	TONGUE	ULCER	ABSENT		SND	PRESENT	ABSENT	NO RECONSTRUCTION
4	MOORTHY	55	MALE	27795	FLOOR OF MOUTH	ULCER	PRESENT	POSITIVE	MRND	PRESENT	ABSENT	RECONSTRUCTION
5	SELVARAJ	63	MALE	76672	CHEEK	ULCER	PRESENT	POSITIVE	MRND	PRESENT	ABSENT	RECONSTRUCTION
6	SOMU	60	MALE	66968	CHEEK	ULCER	PRESENT	POSITIVE	MRND	PRESENT	ABSENT	RECONSTRUCTION
7	MOHAN	32	MALE	83670	CHEEK	ULCER	PRESENT	POSITIVE	MRND	REACTIVE CHANGES	ABSENT	RECONSTRUCTION
8	VEMBU	46	FEMALE	88253	LIP	PROLIFERATIVE GROWTH	PRESENT	POSITIVE	MRND	PRESENT	ABSENT	NO RECONSTRUCTION
9	RANGAMMAL	35	FEMALE	66828	CHEEK	FACE SWELLING	PRESENT	POSITIVE	MRND	PRESENT	ABSENT	RECONSTRUCTION
10	USHA	57	FEMALE	31679	TONGUE	DYSPHAGIA	PRESENT	POSITIVE	MRND	PRESENT	ABSENT	RECONSTRUCTION
11	SASIKUMAR	26	MALE	88510	CHEEK	ULCER	PRESENT	NEGATIVE	MRND	REACTIVE CHANGES	ABSENT	RECONSTRUCTIOND
12	NATARAJAN	53	MALE	32751	TONGUE	PROLIFERATIVE GROWTH	PRESENT	POSITIVE	MRND	PRESENT	ABSENT	NO RECONSTRUCTION
13	DHANALAKSHMI	43	FEMALE	55943	CHEEK	ULCER	ABSENT		SND	PRESENT	ABSENT	RECONSTRUCTION
14	RAMALINGAM	58	MALE	55915	CHEEK	ULCER	PRESENT	POSITIVE	MRND	PRESENT	ABSENT	RECONSTRUCTION
15	LAKSHMI	45	FEMALE	63550	TONGUE	ULCER	PRESENT	POSITIVE	MRND	REACTIVE CHANGES	ABSENT	NO RECONSTRUCTION
16	CHINNAMMAL	60	FEMALE	54185	CHEEK	PROLIFERATIVE GROWTH	PRESENT	POSITIVE	MRND	PRESENT	ABSENT	RECONSTRUCTION
17	SHANTHI	45	FEMALE	56348	TONGUE	ULCER	PRESENT	POSITIVE	MRND	PRESENT	ABSENT	NO RECONSTRUCTION
18	PRABHAKARAN	45	MALE	72217	TONGUE	ULCER	ABSENT		SND	PRESENT	ABSENT	RECONSTRUCTION
19	HAZARATHAIAH	42	MALE	52608	TONGUE	PROLIFERATIVE GROWTH	ABSENT		SND	PRESENT	ABSENT	RECONSTRUCTION
20	PARTHASARATHY	45	MALE	44360	TONGUE	PROLIFERATIVE GROWTH	PRESENT	POSITIVE	MRND	REACTIVE CHANGES	ABSENT	RECONSTRUCTION
21	BALARAMAN	55	MALE	87546	CHEEK	FACE SWELLING	PRESENT	POSITIVE	MRND	PRESENT	PRESENT	RECONSTRUCTION
22	VEDARATHINAM	53	MALE	99475	LIP	PROLIFERATIVE GROWTH	PRESENT	POSITIVE	MRND	PRESENT	ABSENT	NO RECONSTRUCTION
23	RAJENDRAN	48	MALE	14098	TONGUE	ULCER	PRESENT	POSITIVE	MRND	PRESENT	ABSENT	NO RECONSTRUCTION
24	KAMALA	60	FEMALE	89330	CHEEK	NECK MASS	PRESENT	POSITIVE	RND	PRESENT	PRESENT	RECONSTRUCTION
25	SHANKAR	50	MALE	10125	TONGUE	PROLIFERATIVEGROWTH	PRESENT	POSITIVE	MRND	PRESENT	PRESENT	NO RECONSTRUCTION
26	DEIVANAI	38	FEMALE	89483	CHEEK	ULCER	ABSENT		SND	PRESENT	ABSENT	RECONSTRUCTION
27	ALLIYAMMAL	65	FEMALE	10134	CHEEK	PROLIFERATIVE GROWTH	PRESENT	POSITIVE	MRND	PRESENT	PRESENT	RECONSTRUCTION
28	AISH	40	MALE	15840	CHEEK	DYSPHAGIA	PRESENT	POSITIVE	MRND	PRESENT	ABSENT	RECONSTRUCTION
29	DURAISAMY	62	MALE	15773	CHEEK	PROLIERATIVE GROWTH	PRESENT	POSITIVE	MRND	PRESENT	ABSENT	RECONSTRUCTION
30	BALARAMAN	41	MALE	85970	TONGUE	ULCER	ABSENT		MRND	PRESENT	ABSENT	NO RECONSTRUCTION
31	SHANKAR	36	MALE	98677	TONGUE	PROLIFERATIVE GROWTH	PRESENT	POSITIVE	MRND	REACTIVE CHANGES	ABSENT	RECONSTRUCTION
32	SAROJA	56	FEMALE	92056	TONGUE	ULCER	PRESENT	NEGATIVE	MRND	PRESENT	ABSENT	NO RECONSTRUCTION

S. No	NAME	AGE	SEX	IPNO	SITE OF ORAL CAVITY CANCER	PRESENTING FEATURE	CLINICALLY PALBALE NODE	FNAC	NECK DISSECTION	HPE POSITIVE NODE	EXTRANODAL SPREAD	WOUND CLOSURE
33	MANIKKAM	55	MALE	88543	TONGUE	ULCER	ABSENT		SND	REACTIVE CHANGES	ABSENT	RECONSTRUCTION
34	POUNAMMAL	50	FEMALE	52667	TONGUE	DYSPHAGIA	PRESENT	POSITIVE	RND	PRESENT	PRESENT	NO RECONSTRUCTION
35	ANANDHAKUMAR	39	MALE	10292	FLOOR OF MOUTH	NECK SWELLING	PRESENT	POSITIVE	MRND	PRESENT	ABSENT	RECONSTRUCTION
36	ILANAYIL	52	MALE	6616	CHEEK	ULCER	ABSENT		SND	PRESENT	ABSENT	RECONSTRUCTION
37	PURUSHOTHAMAN	46	MALE	30778	LIP	PROLIFERATIVE GROWTH	ABSENT		SND	PRESENT	ABSENT	NO RECONSTRUCTION
38	KALIYAMOORTHY	57	MALE	31482	CHEEK	ULCER	PRESENT	POSITIVE	MRND	PRESENT	ABSENT	RECONSTRUCTION
39	MUNIRATHINAM	65	MALE	38048	CHEEK	PROLIFERATIVE GROWTH	PRESENT	POSITIVE	MRND	PRESENT	ABSENT	RECONSTRUCTION
40	SENTHAMILSELVAM	48	MALE	37180	CHEEK	ULCER	PRESENT	POSITIVE	MRND	REACTIVE CHANGES	ABSENT	RECONSTRUCTION
41	IRUDHAYAM	48	MALE	28538	CHEEK	NECK SWELLING	PRESENT	POSITIVE	MRND	PRESENT	ABSENT	RECONSTRUCTION
42	LOGANATHAN	54	MALE	35010	CHEEK	ULCER	ABSENT		SND	PRESENT	ABSENT	RECONSTRUCTION
43	ANTONY	73	MALE	35975	TONGUE	DYSPHAGIA	PRESENT	POSITIVE	MRND	PRESENT	ABSENT	NO RECONSTRUCTION
44	THIRUMARAN	63	MALE	13788	TONGUE	ULCER	ABSENT		SND	PRESENT	ABSENT	NO RECONSTRUCTION
45	BABU	37	MALE	26968	TONGUE	PROLIFERATIVE GROWTH	PRESENT	POSITIVE	MRND	PRESENT	ABSENT	NO RECONSTRUCTION
46	KASTHURI	50	FEMALE	40264	LIP	NECK SWELLING	PRESENT	POSITIVE	SND	PRESENT	ABSENT	NO RECONSTRUCTION
47	VICTORSAMSON	62	MALE	35884	CHEEK	ULCER	PRESENT	POSITIVE	MRND	PRESENT	ABSENT	RECONSTRUCTION
48	VENU	62	MALE	61625	CHEEK	ULCER	ABSENT		SND	REACTIVE CHANGES	ABSENT	RECONSTRUCTION
49	SASIKUMAR	32	MALE	42066	TONGUE	PROLIFERATIVE GROWTH	PRESENT	POSITIVE	MRND	PRESENT	ABSENT	NO RECONSTRUCTION
50	MANI	60	MALE	50187	CHEEK	PROLIFERATIVE GROWTH	PRESENT	POSITIVE	MRND	PRESENT	ABSENT	RECONSTRUCTION